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ВОПРОСЫ ЭКОНОМИКИ

English Translation of the U.S.S.R. Monthly Journal VOPROSY EKONOMIKI

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A New Stage in the Development of International Socialist Division of Labor

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The Application of Balance-Sheet Methods in National Economic Planning on the Republic Level

Present Problems of the National Economic Development of the Byelorussian Soviet Socialist Republic

The Outlook for the Economic Development of Tadzhikistan

Exploit the Natural Resources of the Economic Region More Thoroughly

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Pre-Congress Discussion of the Theses of Comrade Khrushchev's Report

CONTROL FIGURES FOR THE DEVELOPMENT OF THE NATIONAL ECONOMY OF THE USSR IN 1959-1965

L. Berri and A. Tolkachev:

A Decisive Step in Creating Material and Technological Basis for Communism

During the years of Soviet power, the peoples of our country, under the leadership of the Communist Party, have effected tremendous transformations in all fields of the economy and of culture. As the result of the industrialization of the country, the collectivization of agriculture, the elimination of exploiting classes and the execution of a cultural revolution in the USSR, the socialist mode of production has triumphed. Our country was transformed from a backward agrarian country to one of powerful industry and collective farms.

The level attained in the development of the productive forces and of socialist relationships of production makes it possible for the Soviet Union to enter upon a new and most important period in its history — the period of upbuilding of a communist society on a broad front. As indicated in the theses of the report of Comrade N. S. Khrushchev at the 21st Congress of the CPSU, the major objectives during this period will be those of all-round creation of the material and technological basis for communism, the further reinforcement of the economic and defense capabilities of our country and, simultaneously, the ever more complete satisfaction of the rising material and spiritual requirements of the Soviet people. During the present Seven-Year Plan, a major step will be made in realizing the magnificent program for the upbuilding of communism in our country.

Socialism and communism, being two phases in communist society, differ in the level of development of the productive forces and the degree of maturity of the relationships of production. The transition from socialism to communism signifies a leap to a higher qualitative condition of the economy, technology and culture.

Communism will be founded upon the material and technological basis required thereby, constituting a ramified system of automated high-output machines, based on electrification and embracing all the primary branches of material production, including the production of machines themselves. The material basis of communism must incorporate all progressive trends in modern technology. It will be characterized by a new structure and by improvement in the forms of organization of social production, by a high level of concentration thereof, by specialization and combination. The material and technological foundation for communism presupposes that all participants in the production of material goods will have a high level of qualification, truly that of engineers.

The creation of the material, technological basis for communism is determined in the final analysis by the need need to attain a level of development of the forces of production at which all the sources of social wealth flow in abundance and in which the conditions of labor undergo a fundamental change, permitting the free and all-round development of man. A decisive condition for the creation of a communist abundance of material and spiritual wealth is a rise in the productivity of social labor by all possible means, based on continuous technical progress, and systematic improvement in equipment, technology and the organization of production.

The creation of the material, technological basis for communism is indissolubly interrelated with all-round improvement in the socialist relationships of production. It results in qualitative changes in social property, in approximation of the two forms of socialist property, and in the solution of such social problems of the very highest order as elimination of existing differences between mental and physical labor, and between town and country.

At present it is not possible to define in detail the technological conditions required for a communist society. However, its fundamental characteristics are becoming increasingly clear. The establishment of the material, technological basis for communism in the USSR is occurring in a period of onset of a revolution in science and engineering. The primary trends in the present revolutionary transformation in science and engineering, called forth by the maturing requirements of the material life of society, are determined by the specific characteristics by which the material and technological basis of communism will be characterized: the system of working machines, the technology and the types of power on which production rests. Social production is entering an epoch of universal dissemination of automated systems of machines and equipment founded on the application of electronics, an epoch of ever wider introduction of the most highly automated equipment — self-regulating systems, assuring that the optimum process procedures will be pursued, on the basis of the utilization of programming machines. The grandiose prospects in the field of automation are indissolubly linked with the utilization of polymer materials and the generalized employment of chemical methods of acting upon the objects of labor. The development of chemistry opens perspectives for a decisive transition from mechanical to chemical processes of continuous production, and the manufacture of a broad range of new materials, including materials possessing planned properties. Mankind has entered a period of revolutionary transformation of the energy base on which society rests, and the use of new energy-carriers to produce thermal energy and electricity, and of the development of atomic power.

It goes without saying that the most important characteristics of the basis for communism in material technology cannot be looked upon as invariable. Vast changes will occur therein as the result of the achievements of science and engineering. For example, when mankind has mastered methods of deriving cheap energy from thermonuclear reactions, the structuring of the energy carriers will be changed fundamentally. In turn, the presence of an unlimited quantity of cheap energy will govern priority development of the production of aluminum and other light metals and polymer materials. This will result in significant shifts in the relationships of materials of construction, as steel will increasingly be replaced by aluminum, light alloys and plastics which, as we know, enjoy major advantages. Introduction of chemical procedures will result in fundamental changes in the raw materials base on which production is founded. Automation will change the appearance of the apparatus of production in the country. Thus, the process of creation of a material, technological basis for communism is accompanied and will be accompanied by the most profound changes in the structure of social production.

The socialist system has opened limitless prospects for realization of the vast possibilities inherent in modern science and engineering.

We know that capitalism, nearly 200 years after the industrial revolution in England marking entry into the epoch of mechanization of production, has not been able to make large-scale machine industry the all-embracing form of production. Modern capitalism enchains the development of the new technological revolution and places serious social and economic obstacles in its path. The solution of many maturing problems of the new technology exceeds the bounds of the possibilities available to private corporations. The antagonistic contradiction between capitalist production and consumption by the broad masses of the working people inhibits the development of mass, automated production. The automation of production — one of the very greatest achievements of mankind — causes the working people of the capitalist countries fears and alarm for their future. One of the founders of modern cybernetics, N. Wiener, writes that "the introduction of automated machinery will give rise to unemployment by comparison to which the current decline in production and even the crisis of the 1930s will seem to be a friendly joke."* "Automatons versus man" — this is the monstrous logic of modern capitalism.

Only under the conditions of the socialist form of production are possibilities created for the most complete realization of the maturing revolutionary transformations in the field of technology. Socialist reality confirms Marx' prediction of genius: "If the workers ruled, if they had the possibility of producing for themselves, they would very rapidly and without great efforts raise capital (to use the expression of the vulgar economists) to the level of their needs."† The greatest discoveries of modern sciences and engineering will be incorporated in the material, technological basis of communism. The creation of the technical foundation for communist society will increase man's rule over nature to an uncommon degree.

The upbuilding, in the next 15 years, of the material, technological basis for communism, will make it possible for the Soviet Union to emerge in first place in the world not only in total volume of production, but in the output of products per head of population. This will constitute a great triumph of the USSR in the peaceful economic competition with capitalism.

The theses of the reports by Comrade N. S. Khrushchev point out that a decisive step in the creation of a material and technological basis for communism will be taken during the current Seven-Year period. During 1959-1965, the USSR will achieve an enormous growth in the productive forces, and an expansion of the scale of production of the most important forms of production. Priority development of production of means of production will assure a powerful upsurge in the leading branches of heavy industry. In 1965 the smelting of pig iron in our country will come to 65-70,000,000 tons, the melting of steel to 86-91,000,000 tons, the mining of coal to 596-609,000,000 tons, the recovery of oil to 230-240,000,000 tons, the production of gas to 150,000,000,000 cubic meters, the manufacture of electric power to 500-520,000,000,000 kwh, the production of cement to 75-81,000,000 tons, etc. At the same time, the most important branches of production turning out consumer goods will develop at high rates. In toto, the production of means of production during the seven-year period will rise by 85-88%, that of consumer goods by 62-65%, and the gross production of agriculture by 70%.

A decisive condition for the creation of the foundation for communism in material technology, said N. S. Khrushchev at the reception for the graduates of the military academies on November 14, 1958, is complex mechanization and automation of the processes of production in all branches of the national economy.

The Soviet Union has attained major successes in the field of mechanization of production. Currently, the mechanization of many laborious and heavy jobs has been completed or is close to completion in the coal, wood-working, construction, and other branches of the national economy. At the same time, in the field of mechanization of production serious shortcomings still remain. A large number of workers are engaged in manual labor in the fulfillment of transport, warehouse, inspection, repair and other secondar forms of labor. In the manufacture of machinery, hand labor now takes up almost half of all expenditures of labor time. In construction, the woodworking and the coal industries, a considerable proportion of the workers are engaged in manual labor due to the fact that mechanization is not multi-faceted.

All-round mechanization of production will be fully completed when the number of workers engaged in manual labor constitutes not more than 5-10% of the total number in terms of the portion of the work mechanization of which is technically impossible or economically undesirable. Today, all-round mechanization is approaching complete introduction only in particular fields of work.

In the period of 1959-1965 the level of all-round mechanization of production will rise considerably in all branches of the national economy. Thus, the level of complex mechanization of particular jobs in 1965 will attain 95-100% in earth moving, the loading and unloading of non-mineral building materials and the vertical delivery of building materials and in erection of construction assemblies. The level of mechanization of coal loading in horizontal and sloping stopes will rise from 36% in 1956 to 65-70% in 1965. The degree of timbering with metal and mechanized means will rise to 60-65% in 1965. In the lumber industry, mechanization of the clearing of undergrowth will rise from 7% in 1958 to approximately 90% in 1965.

The Seven Year Plan envisages a substantial rise in the mechanization of the processes of production in the manufacture of machinery. For example, in the foundry industry, according to available data, the level of mechanization of molding in 1965 has reached 70% for the machinery manufacturing industry as a whole. In this connection it should be borne in mind that the manufacture of molds and cores represents not less than 50-70% of the total labor involved in the production of castings. Mechanization of shaking out of castings — also a very laborious process — will in 1965 represent up to 90% of the total production of castings. A significant increase in the level of all-round mechanization in the forge shops is envisaged. The percentage of special-purpose, multiple and successive-operation machine tools will rise sharply, and this will facilitate a reduction in the percentage of manual labor.

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* Norbert Wiener, Cybernetics and Society, Foreign Literature Press, 1958, p. 166.

† Karl Marx, Theories of Surplus Value (Capital, Vol. IV), Part II, 1957, p. 584.

There will be a significant rise in the level of all-round mechanization in a number of branches of the light and foodstuffs industries. In the meat industry, where the production operations performed by hand still constitute about 50% of the total, the Seven Year Plan will see the introduction of hundreds of mechanized mass production and automated lines, which will markedly reduce outlays of hand labor. In the fisheries industry, the level of mechanization of fishing and processing will attain 80-90% by 1965. In the sugar industry, laborious processes will be mechanized to a considerable extent. Thus, unloading of beet-root from freight cars and trucks will be 80-90% mechanized in 1965.

The present Seven Year Plan will be characterized by a further upsurge in the level of mechanization of agricultural production. It is planned to mechanize all the work in the grain-production operations of the major agricultural districts. It is proposed, by 1965, to complete mechanization of operations in preparation of silage, the electrical shearing of sheep and electrical milking of cows in the state farms.

The report by Comrade N. S. Khrushchev at the December, 1958, Plenum of the Central Committee of the CPSU presented a rounded description of the objectives in the all-round mechanization of agriculture: "What is today the major problem in the mechanization of agriculture? It is important to accelerate work in creating a system for machines for complete mechanization of cotton, sugar beet, potato and vegetable cultivation. It is necessary to take decisive steps to realize the mechanization of laborious jobs in stock-farming. It is necessary, in a short period of time, to solve the problem of mechanization of loading, unloading and transport work, so as to liberate the collective farmers and workers of the state farms from work that is heavy and of low productivity. It is necessary, in the immediate future, to create good machines for haying and for baling straw, for mechanization of drainage operations, preparation of peat, lime and other local fertilizers and to provide the collective and state farms with these machines in the necessary quantities."

During the seven-year period it is proposed to manufacture more than 1,000,000 tractors, about 400,000 harvester combines and a large volume of other machines and equipment for agriculture. All this will make it possible to expand the all-round mechanization of agricultural production in accordance with the various zones of the country, and to mechanize both the basic and the secondary processes of production.

Completion of complex mechanization will reduce heavy manual labor virtually to zero in the years immediately ahead, and one of the most important of social problems will thus be solved. However, this will not mean that physical labor will be totally eliminated. As pointed out in the Law on Reinforcing the Ties of the Schools to Life and on the Further Development of the System of Public Education in the USSR, "harmonious development of man is inconceivable without physical labor, creative and joyous, which strengthens the organism and promotes the vital functions."

The automation of production is the highest, and a qualitatively new stage in all-round mechanization. The introduction of automation has been conditioned objectively by many economic and technical factors. The existing tendency to strengthen the continuity of the process of production is organically related to the creation of automatic systems of machines. It should also be noted that in a number of branches of industry — the chemical, the oil refining, the atomic, the power producing, etc. — the control of the processes of production is possible only by means of automation at the level of the technological parameters now attained (velocity, pressure, temperature, etc.). Automation markedly raises labor productivity and the economic efficiency of production as a whole and is the material foundation for a significant change in the functions of workers in production, the approximation of the labor of workers and collective farmers to that of engineers, technicians and agronomists. High rates of expanded reproduction, crisis-free development of the economy, unprecedented possibilities for the development of mass production make possible, with proper consideration for factors of economic advisability, unlimited expansion of the sphere of application of automation in Soviet industry. The wide development of automation of production in the USSR will fundamentally improve the workers' conditions of labor, facilitate an increase in the material and cultural living standard of the workers, and create the conditions required for reducing the working day. All these factors govern the vital necessity for all-round development of automation under the conditions of socialism.

During the present Seven-Year Plan, a major step will be taken in the automation of production. Complex automation of the processes of production will find application first in the branches of industry most prepared for this. This includes power plants, oil refineries, all the major branches of the chemical and foodstuffs industries, blast furnace, open hearth and rolling mill operations in ferrous metallurgy, etc. Enterprises with all-round automation will also be established in other branches of the national economy. The production of machine tools and other machines for automation of individual operations will take a sharp upturn. In 1965 automatic and semi-automatic machine tools will constitute 43% of the total number of metal-cutting types and sizes, as against 33% in 1957. Significant changes will occur in the pool of equipment for the textile industry. The share of automatic looms in the cotton textiles industry will attain 60-65% of the total, 75-80% in the silk industry, about 90% in the linen industry, and about 70% in the woolen.

During the Seven-Year Plan there will be an ever-greater conversion to automation of departments and entire enterprises. With this object it is planned to install not less than 1,300 lines of automatic machine tools in the machinery-manufacturing and metal-working industries. In oil recovery, 70-80% of all objects (wells, pumping stations, water pumping stations, etc.) will be encompassed by automation and telemechanization. A large number of automatic lines for the production of butter will be installed in the foodstuffs industry. There will be a substantial expansion of the employment of automation in the sugar industry.

One of the major trends in the development of modern technology is automation on the basis of the utilization of vacuum and transistor electronic instruments and electronic mathematical machinery, which alone make possible the functioning of self-correcting systems of machines and apparatus.

The control figures for the development of the national economy of the USSR for 1959-1965 envisage a substantial expansion of production of instruments and facilities for automation, as well as expansion of research and designing and planning work in the field of automation. The Seven-Year Plan of scientific work by the USSR Academy of Sciences envisages the study of the principles of flow of processes of production and their mathematical expression, elaboration of the theory of self-adjusting systems, a number of problems of electronics, communications, etc.

A colossal saving of concrete and abstract labor in the national economy is provided by the introduction of chemical processes into production. A high level of use of chemistry is one of the most important characteristics of the level of material technology required as a foundation for communism. The degree of development of, and the efficiency of the tools of labor and of the technology of production in a number of branches of industry are in direct relationship to the level of introduction of chemistry into production. The development of production today in all the leading countries is marked by preferential growth of the chemical industry.

Today the USSR is second in the world, after the USA, in the manufacture of chemical products, and it is on a par with the USA in the rates at which the manufacture of new types of chemical products are brought into production. In 1959-1965 major undertakings will be undertaken in our country for the further development of the chemical industry and the introduction of chemical processes in other branches of the national economy. In the overall, the volume of production of the chemical industry during the seven-year period will rise almost 3-fold. In its share of total gross production of industry, the chemical industry will come to occupy one of the foremost places.

The development of the chemical industry will result in expansion of the raw materials base for a number of branches of the processing industry and for a change in the structure thereof. For example, in the textile industry, the share of chemical fibers at the end of the seven-year period will constitute not less than one-fifth of the total volume of fiber.

The building of a foundation for communism in material technology presupposes an impetuous growth of production of polymer materials of programmed properties: plastics, synthetic fibers, rubber, etc. Plastics are increasingly replacing copper, zinc, lead, tin, steel, leather, ceramics, rubber, wood, and are also utilized in fields in which other materials are inapplicable. In prospect is their large-scale use for the production of prefabricated structural components, parts of transport facilities (auto bodies), furniture, the bodies of refrigerators, tanks, etc. Plastics will play a major role in the solution of current engineering problems in the manufacture of machinery, electronics, radio engineering, jet and nuclear engineering, the building industry, etc.

Synthetic fibers (kapron, lavsan, anid, nitron, enant) will acquire ever greater use. They will replace less advanced materials and materials in short supply in the production of tires for automobiles, rubber products, etc. The growth in production of chemical fibers will make possible complete satisfaction of the need of the population for fabrics, clothing, shoes and high-quality synthetic furs. The use of synthetics will provide major economies for the national economy. For example, every 100,000 tons of plastics of the appropriate types will replace 80,000 tons of lead, 5,000 tons of thread, and 13,000 tons of rubber and yield an economy of up to 1,200,000,000 rubles. Calculations show the high efficiency of utilization of plastics in housing construction. Employment of plastics in the manufacture of machinery will result in reducing the labor required for the manufacture of machines and products, reduction of their weight, improvement in quality, increase in service life, and will permit large-scale substitutions for nonferrous metals and alloy steels.

The chemistry of high molecular compounds makes possible efficient utilization of vegetable wastes and by-produc for the manufacture of synthetics. Thus, one cubic meter of wood pulp yields 160 kg of artificial silk or 170 kg of artificial wool or as much staple as is yielded on the avera by 0.5 hectare of cotton plants. Yet the labor required for the production of one ton of viscose staple is 70 man-days, while one ton of cotton requires 238 man-days, and one ton of natural wool requires 694 man-days.

During the present Seven Year Plan, the production of synthetic fibers will multiply by a factor of 12 to 14, while the production of plastics and synthetic resins will rise by a factor of 6.7. In 1965 it is planned to employ more than 2,500,000 tons of liquid by-product gas hydrocarbons for the production of a number of types of chemical products. This is equivalent to 300,000,000 poods of grain, to 13,000,00 tons of potatoes.

Introduction of chemistry will make it possible to eliminate or reduce to a minimum the utilization of food fats, grain and other food products for industrial purposes. In prospect is conversion of the production of cleansing substances (except for toilet soap) as well as industrial ethyl alcohol, the majority of lacquers, paints and other products now manufactured from edible raw materials to synthetic raw materials derived from petroleum and natural gases and petroleum products. A major forward step in this direction will be taken in 1959-1965. This will lead to an enormous saving of social labor. Thus, one ton of cleansing powders made from petroleum chemicals, costs only one-fourth as much as one ton of 60% laundry soap.

The production of mineral fertilizers and poisons for agriculture will undergo considerable development. Their quality will rise due to the production of highly-concentratec combined and non-deteriorating (granulated) fertilizers. This will make it possible to reduce the volume of haulage, and also to produce a better effect on restoring the fertility of the soil. In the production of poisonous chemicals, the share of preparations and combined technical means for combating agricultural pests and diseases, and of herbicide — chemical weed-killers, will increase.

During the period of the developing upbuilding of communism, chemical processes will be introduced on an exceptionally large scale in various branches of industry. Oxygen will come into ever increasing use in blast furnace and open hearth operations, while new and highly productiv methods of acid and ammonia leaching of ores will be developed in nonferrous metallurgy. Further introduction of chemistry into production will facilitate the improvement of technology and a sharp rise in the productivity of social labor.

A leading role in the provision of the material, technological basis of communism is the electrification of the national economy. This has the most profound and multifaceted influence on all branches of the economy. There is the most intimate connection between electrification and the latest automated electronic engineering, rocket and rada engineering, television and atomic engineering. Without electricity, polymer chemistry, production of synthetics anc the like are unthinkable. Electrification lies at the foundation of the most important progressive trends in the develop ment of engineering — all-round mechanization, automation and application of chemistry.

The creation of the basis for communism in material technology will find expression in the thorough electrification of the country on the basis of the unified power system of the USSR, and in the broadest introduction of electric power into all the branches of the national economy and into the lives of Soviet people.

In all probability, mankind will master thermonuclear energy so completely in the decades just ahead that it will be possible to employ, for example, the hydrogen in water as a source of energy. The utilization of new energy carriers — terrestrial heat, the energy of arms of the sea, and the radiant energy of the sun in semiconductor installations — will take on a given practical value.

The rising Soviet electric power production and the continuing engineering progress will make it possible not only to complete the electrification of power processes, but sharply to increase the employment of electric power for technological purposes. Electrical engineering will be employed in processing industry (high-frequency installations, new forms of welding, electric vacuum ovens, electric spark machining, ultrasonics). The production of the nonferrous metals and particularly of the rare earth elements and metals will be essentially converted to electrical processes, and these products are the foundation for a number of most important aspects of modern technology. An abundance of electrical energy will open a wide road to new methods of processing products in the food and light industries. Electrical energy will not only facilitate the absolute growth of production of consumer goods, but will make it possible to apply new methods of treating them (sterilization of foodstuffs, electrical desiccation, etc.).

Even during this Seven-Year Plan, along with quantitative increase in the production of electrical power there will occur significant changes in the structure of consumption thereof. There will be a pronounced rise in the proportion of the electric power consumed in agriculture where electricity will be in wide use in stationary production processes and in a number of other types of work. Electrification will play an enormous role in eliminating the existing differences between town and country. During the Seven-Year Plan a major step forward will be taken in the electrification of transport. The control figures propose the electrification of up to 20,000 km of railroads.

Electrification will be widely employed for satisfaction of the household and cultural needs of the population. All workers' housing settlements, state farms and collective farms will be provided with electricity. At the end of the Seven-Year Plan, the production of electric power will rise by more than 120% over the level of 1958. The average annual absolute increase in electric power will be 38.1-41,-000,000,000 kwh.

The Party has set its course toward the construction primarily of highly economical major thermal power plants employing the cheapest types of fuel. Investments in thermal power plants will be 2.5 times as great as during the 1952-1958 period. The increase in power capabilities will be chiefly due to steam-turbine condensation-type plants of 600-1,200,000 kw and more (up to 2,400,000 kw), which will assure a pronounced reduction in unit capital investments and reduction in the cost per kwh of electric power by approximately one-half, as compared with the existing thermal power plants. On the basis of a further increase in the technical level of the power assemblies, it is proposed, by the end of the Seven-Year Plan, to reduce the unit consumption of conventional fuels at thermal power plants to 395 grams per kwh as against 485 at present.

Atomic power plants will represent a significant proportion of the power base of communist society. Even today, atomic power plants of 400-600,000 kw capacity are being built. The theses of the report by Comrade N. S. Khrushchev point out that, during the upcoming Seven-Year Plan, a number of atomic power plants with various types of reactors will go into operation. Atomic engines will take on pronounced significance in transport, as will the use of isotopes in various production processes as well as in scientific research.

Socialist relationships of production and the fact that social ownership of the means of production predominates will create conditions for ever more complete socialization of labor in the national economy. The processes of concentration, specialization and combination of production will be accelerated during the period of rapid upbuilding of a communist society.

The vast rise in the scale of production, the impetuous development of electrification, automation and applications of chemistry will demand socialization of labor on a new and broader scope. This will manifest itself primarily in the development of concentration of production. The creation of a basis for communism in material technology will be accompanied by the further increase in the scale of production in industry and in agriculture. It will be understood that the process of concentration in the various branches will be realized at varying rates, and the relationships between large, medium-sized and small enterprises in the various fields will take shape in different fashion. It should be observed that many medium-sized and small enterprises, carefully specialized and based on modern technology are fully in harmony with the principle of large-scale machine production. Such enterprises will continue to develop in the future in a number of branches of the economy. However, we have an even larger number of small, technically backward enterprises, in which earnings per worker are on the average approximately one-half those in industry as a whole. In these small enterprises there is difficulty not only in introducing modern technology but in inculcating a truly communist attitude toward labor. Therefore the future of small industry is not only one of engineering economics, but also an important social problem. Small enterprises manufacturing products analogous to that produced by large and technically well equipped undertakings will gradually go out of existence with the further growth of large industry and the elimination of the shortage of individual types of products. At the same time, small enterprises satisfying the cultural and everyday needs of the population will undergo further development, but will perform their services at a high technological level. Small enterprises for primary processing of agricultural products in the collective farms, the state farms and the consumer cooperatives will also develop. Moreover, as is pointed out in the theses of the report by Comrade N. S. Khrushchev, in addition to the erection of enterprises for the processing of agricultural products, it is necessary in some collective farms to proceed further to the construction of intercollective farm canneries, bakeries, meat-packing and other enterprises for the processing of meat, milk, vegetables and fruits. This will make it possible to build larger enterprises, with the utilization of modern equipment and production technology.

The further development of the concentration of production on the basis of highly-productive technology is a most important factor in increasing labor productivity and sharply reducing cost of production. During the current Seven-Year Plan there will be a significant improvement in the level of concentration of production. Thus, the average capacity of a newly-launched blast furnace will almost double over the figure for 1951-1955, the capacity of an open hearth furnace will more than double, and that of a rolling mill will rise more than three-fold. There will be a considerable increase in the power of the turbine-actuated power plants going into operation. 47-50,000,000 kw will be added at thermal power plants, chiefly due to construction of large condensation-type stations of capacities of a million kw and more, with units of 100,000, 150,000, 200,000 and 300,000 kw capacity each. This will make possible a substantial acceleration of construction of power plant erection, and a marked reduction in the cost thereof.

Mines and open cut operations to be launched in the future will generally be of large capacity and will have higher industrial economic indices. In 1959-1965 it is planned to build approximately 156 large new enterprises in light industry and to complete the construction of 114 enterprises begun prior to 1959. Reconstruction on a large scale, and the partial expansion and technological re-equipment of enterprises actually in operation, chiefly in processing industry, also lead to an increase in the role of the most powerful enterprises.

The basis for communism in material technology is characterized by a high level of specialization in industry, agriculture, transport, construction and other fields. Under these conditions, mass production will be combined with the output of a broad assortment of products. The need for such a combination is called forth by the rise in the material well-being of the people. Specialization and the standardization and unification of parts and products connected therewith must, in the light of these demands, assure that production will be on a mass scale and flexible.

The expansion of the scale of production requires precise and in a number of cases narrower specialization of machinery-manufacturing enterprises and plants in other branches of industry. Thus, narrowly specialized furniture, shoe and clothing factories, as well as others, will become common. Narrow specialization serves, in these enterprises, as the basis for the introduction of conveyor belt methods of operation, all-round mechanization and automation of production.

The rise in social needs, and technological progress, will condition the shaping of new branches and fields of output in the manufacture of machinery, the chemical industry, nonferrous metallurgy, light industry, etc. Specialization part-by-part, which creates exceptionally favorable conditions for the organization of mass flow of production and a sharp improvement in all the economic indices of the enterprise, will undergo tremendous development. An increase in the level of part-by-part specialization is also called forth by present tendencies in the development of machinery-manufacture engineering. Thus, the further broad development of standardization, interchangeability and the principle of production by assemblies will facilitate a rapid rise in mass specialized production of standardized and unified parts, combinations of parts and assemblies, as well as the organization, on a large scale, of specialized assembly plants producing finished machines. Construction will be converted to a mechanized process of assembly and erection of buildings and structure from blocks, parts and assemblies manufactured at specialized enterprises.

The development of part-by-part and technological specialization in the industry of the USSR will not proceed by copying the experience of the USA. The principle peculiarities of the development of specialization in our country are conditioned by the fact that in our economy planning is dominant and also by the fact that the level of concentration of production is higher. This makes for the higher level of complexity of our plants. This will make itself felt in the future in the structure of our industry. It should also be observed that in the USSR the system of subcontractors serving assembly plants will not be so dispersed as in the USA, where hundreds of small and tiny enterprises, in competition with each other, manufacture the same detail or part of a machine. This type of dispersion results in an enormous criminal waste of labor and materials. In the USSR a rational system of subcontractors for the automotive, aircraft and other branches of industry will be established. All this will define the important special features of the apparatus of production in our country's industry.

The organization and development of specialized repair establishments and enterprises for the production of spare parts, a specialized tool industry, a specialized manufactur of loading and unloading equipment, etc., will take on enormous significance to the economy. All this will make for a sharp reduction in the number of workers engaged in secondary activities, the majority of whom do manual labor in repair and tool shops and departments and in loading and unloading.

Specialization of agricultural production will rise to a new level. This will create conditions for a further rise in labor productivity and the receipt of a maximum quantity of output at minimum consumption of labor and materials. In 1959-1965, the state farms will undergo a specialization for the production of specific types of produce. In particular it is planned to concentrate growth of potatoes and vegetables in specialized state farms in the rural areas of such large industrial centers as Moscow, Leningrad, Gorky, etc.

The control figures for the development of the national economy of the USSR for 1959-1965 envisage execution of major measures for specialization and cooperation in industry and other branches of the national economy. It is planned to undertake a serious improvement in the specializ tion of enterprises of general, automotive, tractor, agricultural and heavy machinery manufacture, as well as enterprises of the electrical engineering and instrument manufac turing industry. The number of plants manufacturing the same equipment will decrease. A major program of specialization of functioning and the construction of new specialized departments and plants for the production of castings, forgings and stampings will take place. The share of specialized production of castings will be approximately 90% of the total number of castings at the end of the Seven-Year Plan. In the USA, specialized castings enterprises produce more than half the cast iron and about three-quarte of the steel castings. Consequently, by 1965 the USSR will have overtaken the USA in the level of specialization of casting production.

In the Seven-Year Plan now getting under way, part-by-part specialization in the manufacture of machinery will undergo considerable development. By 1965 it is planned to establish capacities for specialized production that will meet 70-75% of the requirement of the national economy for standard tools, 75-80% of the requirement for metal fastenings, 100% of the requirements in welding electrodes, 100% of the need for standard transmissions, and about 90% of the requirements for pipeline equipment. The capacities of specialized enterprises and departments making fittings, gears, hook link, flat link, ball-and-socket and other types of chain.

Centralized manufacture of unified and standardized assemblies, partial assemblies and parts for the automotive, tractor, agricultural equipment, heavy machinery and other industries will attain further development.

The work of combining and introducing specialization into construction and assembly organizations will be pursued.

The period of accelerated upbuilding of communism will be characterized by an enormous increase in the scale of industrial production. This requires careful utilization of natural resources and reduction of waste and scrap to a minimum. The most efficient method of all-round utilization of natural resources is integrated production, which is one of the characteristics of the basis for communism in material technology. Today about half the total industrial production of the Soviet Union is from branches of industry in which the engineering processes meet the requirements of an economically desirable integration of production.

In the coming 15 years, the level of integration of production that is economically desirable will be realized completely in the petroleum, gas and chemical industry, in ferrous and nonferrous metallurgy and in the pulp-and-paper industry. The level of integration will rise in a number of branches of the food industry, and in the textile and leather industry. Integration of production will progress in the industry based on processing solid fuels for power, chemicals and industrial products, with the object of simultaneous derivation of electrical and thermal energy and chemical products. This will make it possible to rationalize haulage and fuel consumption. Integrated utilization of industrial wastes and scrap will result in purifying the atmosphere and waterways, rendering the conditions of life in our cities and workers' settlements healthier and better.

Huge chemical-and-metallurgical, petroleum chemical, and other integrated enterprises have been established in the USSR. In level of integration, the Soviet iron and steel industry has long since surpassed that of the USA. However, in certain fields of combination of production, the Soviet Union still lags behind the most highly developed capitalist countries. The advantages of the socialist system of economy will permit our industry not only to overtake but to surpass the USA in the field of integration of production. Exceptionally favorable conditions for this have been created as a result of the reorganization of the administration of industry and construction.

The creation of the basis for communism in the USSR in material technology is accompanied by important shifts in the distribution of the productive forces, the accelerated development of the economy in the eastern districts, in bringing production closer to the sources of raw materials, fuels and areas of consumption. During the current Seven-Year Plan and in the years to follow, a further specialization and integrated development of the economies both of the republics and of the large economic geographic districts will take place, and this will significantly improve the efficiency of production to the national economy and will lead to rationalization of inter-regional and intra-regional economic ties. The shifts envisaged in the distribution of production will make for involvement in the economy of natural resources rich in content and profitable in terms of conditions of use, and will also make for the most complete utilization of labor resources in accordance with the accumulated production experience. The enormous natural resources possessed by the USSR will, as a result of major, geological prospecting, organized in accordance with plan, be placed at the disposal of Soviet man.

The development and perfection of production techniques, and the increase in the level of concentration, specialization and integration will raise the production apparatus of our country to a higher level. By 1965 the basic capital of the national economy will rise to 60% or 70% more than its level in 1958. The capacity of the electric power plants will more than double. The pool of metal-cutting machine tools will, according to present calculations, rise to 2,350,000. A substantial replacement program in machine tools is envisaged. The pool of spinning machinery and looms will expand substantially.

The growth and replacement of the productive equipment will be assured by further upsurge in the Soviet machinery-manufacturing industry. During the seven-year period, the production of machinery and of metal-working will almost double. At the end of the seven-year period, machinery manufacture in the USSR will attain and, in a number of fields, surpass, the present level of the machinery-manufacturing industry of the USA. In 1965 the pool of machine tools in the USSR will equal that of the USA. In this connection it must be taken into consideration that the pool of machine tools in the USA is used less than a single shift, while in the USSR the figure is 1.5 shifts. The level of the Soviet machinery-manufacturing industry is also reflected in the overall indices of production of castings, forgings and stampings. In 1965 the specialized capacities for iron and steel casting production will come to a total of 18,700,000 tons, of which 14,700,000 tons represent iron castings and 4,000,000 tons represent steel. In the USA, in 1957, the output of iron and steel castings came to 16,500,000 tons. In individual years it has been somewhat higher than this. However, it should be borne in mind that the castings capacity that it is planned to attain in the USSR at the end of the seven-year period does not include a portion of non-specialized capacities. The data adduced on the pool of metal-cutting machine tools and castings production, and also on the special features of the structure of Soviet machinery manufacture (a higher percentage of the machinery industry produces industrial and power equipment, and a lower percentage goes to the automotive industry) justify the assertion that the Soviet machinery-manufacturing industry is capable of providing considerably higher rates of expanded reproduction of the most important portion of basic capital than can that of the USA.

The Soviet machinery industry assures higher rates of development of power output, ferrous metallurgy, the chemical, cement, textile, foodstuffs and other branches of industry. For example, the rate of turbine manufacture to be attained at the end of the seven-year plan, will make possible, in the subsequent period, an annual increase of 80-90,000,000,000 kwh in the production of electric power, and the output of rolling-mill equipment will make it possible to expand the production of rolled metal by approximately 4-5,000,000 tons per year, etc. The production equipment of the chemical industry will increase rapidly. It is planned to build more than 140 chemical plants of the very largest capacity and to remodel over 130 enterprises. Thus, by the end of the seven-year period a powerful production capacity will be created that will considerably acclerate the upbuilding of the basis for communism in material technology.

Science occupies a special position in the creation of the basis for communism in material technology. "In our day," it is noted in the theses of the report by Comrade N. S. Khrushchev, "successes in the field of industry and agriculture are determined to a considerable degree by the progress of the new technology, basing itself on the latest achievements of the natural and engineering sciences, and therefore the fullest development of science is one of the most important problems facing the government." Science is permeating production ever more profoundly and is becoming, in the words of Marx, a direct productive force. The conclusions of theoretical physics, chemistry, mathematics and the like are of first-class importance for the development of modern industrial production. The creation of a scientific system of cultivation of the soil is unthinkable without utilization of the achievements of contemporary biology, chemistry and other sciences. Transportation, communications and other branches of industry also rest on the achievements of a number of theoretical sciences.

The Soviet state is giving much attention to the development of the material and technological basis of scientific investigations, and the preparation of scientific and engineering personnel capable of bringing technological progress to continuous realization. During the current Seven-Year Plan, 2,300,000 specialists with higher education will be trained. The largest increase in the training of engineers is planned

(Continued on Page 14)

N. Siluyanov:

A New Stage in the Development of International Socialist Division of Labor

The world system of socialism is a commonwealth of states linked by identity of social and economic structure, identity of ideology, and the common goals of building socialism and communism. All this creates the broadest possibilities for, and dictates the necessity for the most intimate economic collaboration among the lands of socialism. In the socialist world, a new type of relationships among states has been developed and is prospering — relations based on the principles of full equality, mutual respect for national interests and brotherly mutual aid.

The countries comprising the world socialist economic system possess colossal economic resources and productive potential. The presence of the very richest resources of mineral raw materials and enormous productive capacities make it possible for the socialist states jointly to solve all possible problems in meeting their needs for raw materials, fuel and finished products.

The industrial production of the socialist countries is rising at high rates, unattainable by capitalism. In accordance with preliminary data, the socialist states multiplied their industrial production nearly five-fold in 1958 over the level of production within their territories in 1937. If it be considered that in 1937 the Soviet Union was the only socialist country, the volume of industrial production of the socialist system of economy rose 9.5 times from 1937 to 1958. The volume of industrial production of the capitalist countries during this same period rose by less than 100%, while in some capitalist countries — the USA and certain others — production has dropped in the recent past.

On the basis of close collaboration and brotherly mutual aid, the more industrially developed countries of socialism assist the economically less developed to eliminate the economic backwardness inherited from capitalism and to create modern industrial production.

Thanks to the impetuous development of industry, the share of the lands of socialism in world industrial production is undergoing an uninterrupted rise. Even today, the share of the world socialist system in the total industrial production of the world as a whole is about one-third, and in 1965 the socialist countries will produce more than one-half the world's industrial output.

The Soviet Union and the Chinese People's Republic, which possess vast natural, economic and human resources, are developing complete, independent complexes of industrial production, which embrace all the most important branches of heavy and light industry. The other countries in the socialist camp possess no such possibilities. Therefore, resting upon the economic power of the entire socialist camp, and primarily of the Soviet Union, and upon mutual assistance, they are developing preferentially those branches of social production for which their natural and economic conditions and the historically-developed production skills of their populations are most favorable. This makes it possible for the socialist countries to save considerable forces and means, more completely to utilize the natural resources and achievements of science and engineering, to reduce the terms of construction, and significantly to improve the productivity of labor.

In all socialist countries, the economic law of priority development of Department I of social production, which is the basis for the growth of all branches of the economy and for the unswerving upsurge of the material welfare and cultural level of the people, is in operation. The socialist industrialization being carried out by the Communist and workers parties does not pursue the objective of autarchy for the economies of the socialist countries. On the contrary, the advantages and benefits available from the international socialist division of labor are utilized to the full in carrying out industrialization. The choice of the branches of industrial production subject to first-priority development in the various countries, is determined not only by the presence of a raw materials' supply and other favorable internal conditions, but by the significance of one or another branch of industry both for the development of the national economy of the given country and for the satisfaction of the needs of other countries in the socialist camp. Comrade N. S. Khrushchev, speaking on July 9, 1958 in the Palace of Culture of the integrated electrochemical works in Bitterfeld, German Democratic Republic, said: "A socialist country cannot conduct its economy in autarchic fashion, each sufficient unto itself. It is necessary to develop and improve cooperation so as to find the most rational utilization of the natural wealth and economic resources of the socialist countries."

Specialization and cooperation among the states in production is currently the prime trend in the development and deepening of the international division of labor in the camp of socialism. The leading role in the development of production specialization and cooperation among the socialist countries is the Council of Mutual Economic Aid, the participants of which are Albania, Bulgaria, Hungary, the German Democratic Republic, Poland, Rumania, the Soviet Union and Czechoslovakia. Participating in the work of the Council of Mutual Economic Aid and its agencies as observers are representatives of the Chinese People's Republic, the Korean National Democratic Republic, the Mongolian People' Republic, and the Democratic Republic of Vietnam.

Currently the countries participating in the CMEA are developing their long-range economic plans and are simultaneously conducting joint activity for comradely coordination of the development of the most important interrelated branches of the national economy until 1965. In their joint work on long-range plans for the development of the national economy, for specialization and coordination of production, and for a further deepening of the international socialist division of labor, the countries participating in the CMEA are guided by the decisions of the Conference of Representatives of Communist and Workers Parties of the Countries Participating in the CMEA, held in May, 1958.

In the theses of the report by Comrade N. S. Khrushchev at the 21st Congress of the CPSU it is stated that future specialization and cooperation in production among the states in the form of comradely coordination of the plans of interrelated branches of the national economy will signify a new stage in the development of the international division of labor in the socialist countries. A rational distribution of production, in which there is a harmonious coordination of the national interests of each socialist state with the interests of the advancement and development of the entire socialist camp is one of the most important sources for acceleration of the rates of rise in the productive forces in all the socialist countries.

Specialization and cooperation in so exceptionally important a branch of industrial production as the manufacture of machinery is acquiring particularly broad scope in the world socialist system.

The socialist countries are giving much attention to the development of the machinery-manufacturing industry. During recent years, in the countries participating in the CMEA, the rates of growth of production in the manufacture of machinery have substantially led the rates of growth of production in industrial production as a whole. The average annual rates of growth in production of the machinery industry in these countries in 1950-1956 was 15-23%, while in England it was 4.5%, in the USA 6.7%, and in France 10.2%. The share of the production of the machinery-manufacturing industry in industrial production as a whole rose from 7-24% in 1950 to 11-31% in 1956 in the countries participating in the CMEA.

During the years of the upbuilding of socialism in the European lands of people's democracy, a number of important branches of the machinery-manufacturing industry have been established: shipbuilding, the auto industry, tractor manufacture and power machinery in Poland; electrical equipment, tractors and shipbuilding in Rumania; autos and tractors, ball-bearings and instruments in Hungary.

As a result of the creation of major new productive capacities in the machinery manufacturing industry, and also of the most complete utilization of the respective capacities, the volume of output of the most important types of machinery and equipment in the socialist countries is rising rapidly. Thus, in the period 1950-1957, the production of metal-cutting machine tools doubled in the CMEA countries, that of turbines rose 130%, that of transformers 140%, that of passenger cars 100%, that of mainline Diesel engines 240%, that of mainline electric locomotives threefold, that of tractors 30%, and that of roller bearings 230%.

The share of the CMEA countries in the world production of certain types of machinery and equipment is quite significant. In 1957 it was 19% of world tractor output, 68% of that of harvester combines, 22% of that of freight cars, 27% of that of metal-cutting machine tools, 40% of that of mainline electric locomotives, and 16% of that of trucks.

The manufacture of machinery in the countries participating in the CMEA has many branches, and this makes it possible for them to produce, with few exceptions, the entire inventory of machinery and equipment required to satisfy the growing needs of all branches of the national economy.

The Soviet Union, which produces the widest variety of machines, equipment, instruments and apparatus, appropriate to the requirements of modern science and engineering, has a powerful machinery industry. In the volume of production of the machinery-manufacturing industry the USSR is in first place in Europe and is second in the world after the USA.

In the German Democratic Republic and Czechoslovakia, machinery manufacturing is the most important branch of industry. In the German Democratic Republic the production of power, metallurgical, electrical engineering, lifting and transfer equipment, machine-tool, automotive, tractor and farm equipment, shipbuilding, Diesel manufacture, instruments precision mechanics and optics are the most developed branches. In Czechoslovakia the production of metal-cutting machine-tools, of forge-and-press, rolling mill and power equipment, of Diesels, equipment for sugar refineries, and equipment for light industry are the leading branches. The share of the manufacture of machinery in the gross output of industry was 31.7% in the GDR in 1957 and 26.6% in Czechoslovakia.

In Hungary and Poland the manufacture of machinery is less ramified than in the GDR and Czechoslovakia. In Hungary the manufactures of Diesels, transportation and farm machinery, tools and the weakcurrent industry have been developed, while in Poland it is shipbuilding, transportation machinery, the automotive industry, the tractor and agricultural machinery industries, and the production of certain types of equipment for heavy machinery. In 1957 the share of machinery manufacture in the total volume of industrial production was 20.6% in Hungary and 17.9% in Poland.

The manufacture of machinery is being developed with success in Bulgaria and Rumania as well. In particular, Bulgaria is seeing the development of agricultural machinery, the electrical engineering industry, transport machinery and shipbuilding, while in Rumania emphasis is on the production of oil extracting and refining equipment, transportation equipment, tractor manufacture and farm machinery. In the total volume of industrial production in 1957, the share of machinery manufacture was 12.8% in Bulgaria and 16.2% in Rumania.

The development of the machinery manufacturing industry in the European lands of people's democracy played an important role in the most rapid restoration of other branches of the national economy and their further uplift. The direction of development of manufacture of machinery in certain countries was significantly affected by the structure of export orders (particularly true of the German Democratic Republic and Czechoslovakia). As the result of the above factors, the production of particular types of machinery and equipment increased at particularly high rates. For example, the production of power-producing, hoisting and transfer, rolling, cement and metal-cutting equipment rose at a particularly rapid pace. At the same time the production of certain other types of machinery such as electrical machinery, chemical equipment, roller bearings, and large marine Diesels developed more slowly and lagged behind the growth in demand.

Thus, a determinate specialization of countries in the production of various types of machinery and equipment came into being in the process of development of machinery manufacture in the European lands of people's democracy. This was significantly facilitated by the continuous expansion of economic collaboration among the socialist countries both within the framework of the Council of Economic Assistance and on the scale of the entire camp of socialism.

The development of specialization and cooperation in production in the countries participating in the CMEA may be grasped, within bounds, by the rise in the volume of mutual deliveries of machines and equipment by these countries. In the period 1950-1957 the export of machinery and equipment from Bulgaria rose 3-fold, from Hungary 90%, from from the USSR 160%, and from Czechoslovakia 210% (see Table on following page).

However, the existing level of specialization and cooperation among the countries participating in the Council of Mutual Economic Assistance is not yet fully adequate to the needs and objectives of the present day. This is expressed in the very wide list of products of the machinery industry in the various countries, the parallel production of machinery and equipment of identical model, etc. The inadequate degree of specialization is also borne witness to

Machinery and Equipment as % of Export and Import of CMEA Countries, 1950 and 1957

	1950		1957	
	Machinery and Equipment		Machinery and Equipment	
	Import	Export	Import	Export
Albania	30.9	—	39.3	—
Bulgaria	36.5	—	29.7	7.5
Hungary	20.8	22.5	12.7	38.5
German Democratic Republic	5.5	28.0	7.1	43.8
Poland	32.4	7.8	23.8	20.0
Rumania	37.1	4.2	15.7	10.5
USSR	21.5	35.3	25.7	25.9
Czechoslovakia	11.2	26.4	18.8	40.9

by cross-shipment of certain models of machinery and equipment. For example, with a total production of over 70,000 metal-cutting machine tools in the European lands of peoples democracy, the cross-shipments among these countries came to a total of 3,412 machine tools, or about 5% of the volume of production. Of a total volume of production of 24,000 presses and forging equipments, cross-shipments totalled only 662 units, or 2.7%. In 1957 the peoples democracies of Europe manufactured about 39,000 tractors, but only 5,380 units went to cross-shipments.

It is also necessary to note that in some countries, the broad assortment of products of the machinery industry being manufactured in small lots did not facilitate reduction in cost of production and increase in the engineering level of the machines and equipment produced and consequently the further technical progress of the national economy.

With the development of economic collaboration between countries, there were established within the framework of the Council of Mutual Economic Assistance the necessary conditions for deepening the specialization and cooperation of production among them. At the VII session of the Council of Mutual Economic Assistance, which occurred in 1956, recommendations were adopted on specialization of the production of these countries along the major dividing lines between groups of machines and equipment. The recommendations of the VII session of the CMEA on international specialization in production embraced over 600 groups and models of machinery and equipment, including power producing and electrical machinery, machine tools and forge-and-press equipment, hoists and transfer equipment, metallurgical and casting equipment, equipment for the coal and petroleum industry, tractor and automobile manufacture, farm equipment, the production of railway rolling stock, shipbuilding, etc. Realization by these countries of the recommendations adopted by the CMEA on specialization of production in the field of machinery manufacture would facilitate reduction of unjustifiable parallelism in the manufacture of particular types of machinery and equipment, and this in turn would make it possible to increase the runs and to reduce cost of production, to raise the technological level of production and the quality of the products, and to improve utilization of the productive capacities.

In connection with the recommendations adopted, the production of equipment for open workings is developing primarily in the USSR and the GDR, equipment for briquetting plants in the GDR, equipment for cement plants with kilns having daily capacities of 100 to 2000 tons or more in the GDR and USSR, under 800 tons in Czechoslovakia, 400-450 tons in Rumania, apparatus for distillation of coal tar in the USSR and Poland, equipment for the polygraphic industry in the USSR and Czechoslovakia, mainline Diesel locomotives of 900 and 1800 hp in the GDR, of 1200 hp in Rumania and Czechoslovakia, of 1650 hp in Czechoslovakia, of 4,000 hp and more in the USSR, seagoing vessels of 15-25,000 tons deadweight in Poland and the USSR, and those over 25,000 tons deadweight in the USSR.

The specialization in production of the major forms of machinery here outlined envisages large-scale cooperation among the CMEA countries in the field of deliveries of individual parts, assemblies and aggregates. Thus, for example, Czechoslovakia and the USSR participate in providin the Polish shipbuilding industry with assemblies needed in t manufacture of Diesel engines, and also ship an electrical component to Poland for the production of electric locomotives (during the first years of their manufacture there).

Questions of further deepening of the international socialist division of labor, of intergovernmental specialization in production and cooperation as a most important condition for advancing to mass and large-scale production, which is more progressive and economically more advantageous, were examined at the 9th (June 1958) and 10th (December 1958) sessions of the CMEA. Thus, at the 10th session a detailed discussion was held and appropriate decisions were taken on the development, specialization and cooperation in the production up to 1965 of plastics, synthetic staple fibers, synthetic rubber (primarily made from oil refinery and natural gases), and mineral fertilizers, by the countries participating in the CMEA, and also on questions of specialization and cooperation in the production of various types of rolled metal and ferrous metal tubing until 1965, with provision for the construction and starting up of new rolling mills in the CMEA countries. An all-round examination was made of the natural and economic conditions of the various countries, and also of the technical and economic peculiarities of production.

In all the countries participating in the CMEA, it is planned to develop the production of plastics and synthetics which have a broad range of application in the national economy, with the purpose both of meeting the needs of the individual countries and of mutual exchange of certain types of these products among countries. In view of the great significance of the production of chemical fibers for expansion of production of consumer goods, it is planned to develop this at high rates in all the countries participating in the CMEA. In terms of production of synthetic rubbers it is planned to specialize these countries in the production of various types of rubber in accordance with the available supplies of raw materials, and also the presence of a base in production of engineering and technical personnel. In the field of production of mineral fertilizers it was found desirable to proceed with its development in all the CMEA countries, nitrogen and phosphorus fertilizers to find development in each country, and potassium in those where the necessary supplies of potassium salts were to be found.

The 10th Session of the CMEA also took a decision on specialization and cooperation in the production of various types of rolled metal and ferrous metal tubes in the participating countries with the object of more complete filling of the requirements of these countries for these types of products. The most rational development of the production of particular types of rolled metal and tubes in accordance with the construction of new rolling facilities is provided fo and in particular of more modern mills permitting application of the latest rolling techniques, as well as attainment of the maximum possible economy in the production of rolled metal and tubes and the most rational utilization of the capital investments assigned to the development of the rolling industry. The measures developed for specialization of production of particular types of rolled metal and tubes will be coordinated with the accepted specialization in the machine-building industry of the CMEA countries. These measures in the field of specialization of rolling production will make it possible to increase labor productivity in rolling departments, improve the quality and reduce the cost of the rolled products. The planned specialization and cooperation in the production of particular types of rolled metal and ferrous tubes is only the first step in this direction.

The CMEA countries also discussed questions having to do with the construction of pipelines for transporting oil from the Soviet Union to Hungary, the GDR, Poland and Czechoslovakia. Solution of this problem will have great significance in connection with the increase, in 1961-1965, of the volume of Soviet deliveries of petroleum to these countries. The designing and construction of oil pipelines will be carried out by the countries involved on their own territories with active collaboration among them, and major technological assistance from the Soviet Union.

In the development of production specialization and cooperation among the socialist countries, joint construction of industrial and other units, in particular enterprises of the raw materials producing industry and power-producing units, is of particular importance. Thus, in Poland, construction of large lignite strip mines is being conducted by the joint efforts of Poland and the GDR. In Rumania joint efforts of Rumania, the GDR, Poland and Czechoslovakia are being applied to erect an integrated plant for production of cellulose on the basis of processing of local reeds. Rumania and Hungary are cooperating in the utilization of Rumanian natural gas, are jointly laying the gas line between Rumania and Hungary and are planning the construction of integrated chemicals works. In this connection it should be observed that the installations jointly built become the property of the country on whose territory they have been erected, and the assistance to other countries in the construction thereof is compensated for by shipments of commodities, primarily those manufactured in the jointly-erected installations.

International specialization and cooperation in production by the socialist countries by means of comradely coordination of their long-range plans is now being reflected in the conclusion of bilateral agreements among these countries on the delivery of the most important commodities for a long term of years, up to 1965. These long-term agreements make for successful solution of the problems of specialization of production, primarily in the machinery manufacturing industry, where assurance of orders to keep enterprises busy for a long time has an effect on the organization of production, the engineering level of the products being manufactured, etc.

In accordance with the long-term agreements concluded by the Soviet Union with other CMEA countries, along with the considerable overall growth in export and import deliveries of products of the machine industry, there will be a pronounced rise in the mutual exchange of those types of machines, equipment and instruments in which specialization among the respective countries is being instituted. Thus, in 1965 deliveries of 2,500 kw power trains from Czechoslovakia to the USSR will be 50% greater than in 1959, that of electric locomotives 150% greater, that of mercury rectifiers 100%, that of special and multiple-function machine tools 300%, chemical industry equipment over 200%, and equipment for the textile, footwear, leather and knitgoods industries more than 300% greater. Deliveries of horizontal boring machines and rolling-mill equipment will also expand greatly. In turn, the Soviet Union will sharply increase the export to Czechoslovakia of various types of machines and equipment, for example, coal-mining combines, coal-cutting machines, and various types of metal-working and forge and press equipment.

The long-term agreement between the USSR and the German Democratic Republic envisages nearly a 3-fold rise in shipment of chemical equipment to the USSR from 1959 to 1965, a doubling in deliveries of refrigerator trains, an 80% rise in rolling-mill equipment, and a 330% rise in adding machines. There will also be a significant increase in the delivery to the Soviet Union of feeding transformers and metalworking machine tools. The Soviet Union in turn will substantially increase the export of particular types of metalworking machine-tools, high-powered diesel engines and other products of the machinery manufacturing industry.

Today, when the economic ties among the socialist countries have grown significantly stronger and are taking on an ever more varied character, further improvement in the forms of economic collaboration is of particular importance. The 9th Session of the Council of Mutual Economic Assistance has commissioned the appropriate agencies of CMEA to carry out a complex study for determination of practical methods of increasing specialization and collaboration among the main types of industrial production in the CMEA countries with particular consideration of rational utilization of capital investment funds. In this connection it is necessary to say that the possibility of selecting optimum variants for the development of industry for the period ahead is of much importance and that this in turn will require not only a correct choice of direction in the development of production, but a correct trend in capital investments.

In connection with the shortage of certain types of raw materials in the CMEA countries, the problem has been posed of all-round development of the production of raw materials and materials in countries where conditions are favorable to this. However we know that the capital investments required in the raw-materials producing branches of industry are greater than in the processing branches, and the period required for construction of enterprises of the raw-materials producing industry is approximately twice as great as in the processing industries. This naturally is reflected in the rates of rise in production in all industry. On the other hand, the greater capital requirement of the raw materials branches is frequently accompanied by a somewhat smaller return for formation of the national income per unit of capital investment. All this means that methods have to be found to equalize conditions between countries with a structure of investment requiring more capital and those with less. Under these conditions, the development of means making possible an economic evaluation of the efficiency of measures in the field of rational division of labor among the socialist countries and the finding of the most correct solutions for the economic organization of production there is of particular importance.

In preparing proposals for the most important questions of development of mutual economic ties for the period until 1965 the CMEA countries will proceed primarily from the need to assure the appropriate rates of development of production of raw materials and manufactured materials, particularly the ferrous and nonferrous metals, fuel, power, chemical products, the major forms of products of the light and foodstuffs industries, as well as of agricultural raw materials. In this connection the development of the raw-materials branches of industry will be based on rational utilization of the natural resources and the economic possibilities of each country.

Proceeding from the long-range plans for the economic development of the socialist countries, the Council of Mutual Economic Assistance will elaborate a number of other problems of significance for a number of member states. Thus, the CMEA has proceeded to the development of recommendations directed to the further improvement in the production of the ferrous and nonferrous metals and their more economical utilization in the countries participating in the Soviet. The CMEA Commission on Economic and Scientific-and-Engineering Collaboration in the field of the coal industry has set out to elaborate recommendations for increasing the coking coal resources of the European lands of people's democracy so as to meet the needs of their ferrous metallurgy in the volume envisaged in the long-range plans for the development of the economies of these countries. In these connections it directs particular attention to the need to expand the range of coking coals, and also to introduce an improved coking technique. The Commission on Scientific-and-Engineering Collaboration in the Field of Construction, recently established by the CMEA, will elaborate recommendations on questions of the development in the member states of the production of new forms of construction materials, including those based on the utilization of chemical raw materials, and will prepare proposals for introduction of these materials into construction. The CMEA will proceed with further elaboration of the problems involved in the linking of the power systems of the CMEA countries and the mutual transmission of power for purpose of better meeting the power needs of these countries and also of problems involved in the all-round utilization of the water-power resources of the Danube, including the construction of major hydroelectric plants, drainage systems and irrigation works. The CMEA is giving much attention to problems of development of rational international specialization in the field of agriculture. Solution of problems of transport contacts among various countries to meet the rapidly rising transit hauls of export-import freights will be of no small importance. One of the most important problems in this field will, for example, be rational distribution of flows of freight among the various forms of transportation.

The experience already acquired in economic collaboration among the socialist countries testifies to its enormous efficiency and the need for further improvement of this collaboration for the purpose of maximum utilization of all the advantages inherent in the socialist system so as successfully to build socialism and communism.

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(Continued From Page 9)

for specialties such as chemical engineering, automation, computer technology, radio electronics, etc. There will be a considerable rise in the network of scientific institutions and an expansion in the training of scientific personnel.

A tremendous role in the further development of Soviet science, in the training of highly-skilled personnel capable of making maximum utilization of modern equipment and of creating the technology of the future is played by the measures of the Party and government in reorganizing the system of public education in the country.

The rising economic might of our state, its enormous natural resources, the level attained in engineering and the concentration of production, the successes in the field of science, the high and continually rising skill of the personnel, and the personal interest of Soviet people in the growth and improvement of production: all this makes it possible for the Soviet Union to achieve, in the briefest possible time, a new and gigantic step in the development of the technology and organization of production, and to create the foundations for communism in material technology.

Yu. Koldomasov:

The Rationalization of Inter-Regional Economic Relations in the Seven-Year Plan

The problem of assuring rational inter-republic, inter-regional economic ties in the field of transportation is one of the most pressing problems of the socialist economy. Its significance is defined by the fact that the shifting of a constantly rising mass of industrial and agricultural products from the regions in which it is produced to those in which they are consumed requires a great quantity of abstract and concrete labor in view of the enormous geographical distances in our country. The total work of all forms of transport in the USSR exceeded 1.5 trillion ton-kilometers in 1958, and the result of the fulfillment of the program for a new and powerful upsurge of the entire socialist economy outlined in the theses of the report by Comrade N. S. Khrushchev at the 21st Congress of the CPSU will be to raise this figure to over 2.5 trillion ton-kilometers in 1965. The freight turnover of railway transport alone will constitute 1,800,000,000,000-1,850,000,000,000 tkm in 1965 and will considerably exceed the present turnover of the railways of all the other countries of the world.

The mean length of hauls on the railways of the USSR is the world's largest. Due to long hauls, the share of transportation costs in the value of iron ore is 48%, that of round timber 47%, that of building materials over 25%, cement 17%, coal 14%, metal about 15%, etc. The total expenditures for freight transportation by all means of transport exceed 100,000,000,000 rubles per year.

To assure an uninterrupted increase in the freight turnover of all types of transportation, the government is investing great sums in its development and equipment. During the last seven years these investments (for purposes of direct transportation) came to about 14% of the total capital investments in the national economy as a whole. But in addition thereto, the further development and fundamental technical re-equipment of transport requires substantial capital investments in related fields: ferrous and nonferrous metallurgy, the fuel industry, construction of machinery, etc.

It follows from the foregoing that rationalization of inter-republic, inter-regional and intra-regional transport means is a most important factor in improvement of socialist production and distribution, a major source of economy of abstract and concrete labor, a portion of the overall problem of further improvement in the productivity of social labor in the national economy as a whole.

Under socialism, as the result of the planned development of the forces of production, multi-faceted development of various forms of transportation, and rational organization of the interrelationships among them reduce the relative expenditures upon transportation. However, the possibilities for further reduction in expenditures upon transportation, particularly by rationalization of inter-regional ties, are far from being exhausted.

It must be taken into consideration that inter-regional hauls of bulk freights occupy the major position in the freight turnover of the railroads of the USSR, as they account for over 80% of the total freight turnover in the country. According to approximate calculations, about 10% of all freights are hauled by rail for more than 2,000 km., and this is approximately 40% of the total freight turnover of railway freight.

Rationalization of inter-republic and inter-regional ties contains enormous possibilities for reducing costs of production and sale, for reducing prices of means of production and consumer goods, and for rise in social wealth and further elevation of the material well-being of the working people. This important problem of the national economy may be resolved by a correct geographic distribution of the forces of production, a further development of integration, specialization and industrial coordination, a scientifically-founded specialization of agricultural production among the various regions of the country, and the all-round development and rational interrelationship of all forms of transportation.

The theses of the report by Comrade N. S. Khrushchev at the 21st Congress of the CPSU proceed from the need to rationalize inter-regional economic ties in the national economy on the basis of involving in the economy the natural resources richest in useful content and most profitable in terms of conditions of use, and further geographic approximation of industry to sources of raw material, fuel and consuming regions, and the complex utilization of various forms of transportation. Solution of these problems in the forthcoming seven-year period is indissolubly linked with assuring the maximum possible gain in time required for solution of the fundamental economic problem.

The Soviet Union possesses colossal prospected resources of mineral raw materials and fuels. In a number of fields it is first in the world in prospected resources. In recent years new, extremely rich sources of raw materials, fuel and energy have been discovered, particularly in the Eastern districts of the country. This will make for improvement in the distribution of productive forces, shifting them to the East, toward sources of high-quality and cheap raw materials, fuel and power, and will thus aid in the rationalization of the inter-regional economic ties.

Of prime importance in improvement of inter-regional economic ties during the upcoming Seven-Year Plan is the projected extensive program of development of ferrous and nonferrous metallurgy, with utilization of the exceedingly rich natural resources of raw materials of the Eastern districts, fundamental improvement in the structure of the fuel-and-power balance of the country in conjunction with the enormous scale of construction of a network of oil pipelines, lines to carry refinery products, gas lines and high-voltage electrical transmission lines, as well as extensive introduction of synthetic materials, substitutes and concentrated mineral fertilizers on the basis of forced growth of the chemical industry.

Exceptionally favorable conditions for all-round development of the economies of the economic regions of the country and for rationalization of inter-regional and intra-regional transportation bonds have been created after the reorganization of the administration of industry and construction. As we know, the system of industrial management based on independent administration of each line of production from the very top leads to irrational economic ties and to an overloading of transportation with excessive haulage operations. With the organization of the national economic councils, work got under way on bringing order into these economic ties. The result was a drop in the length of railway hauls (in km), as shown in the table below.

The total saving in industry due to reduction in the mean length of freight haul in 1958 came to over 1,500,000,000 tkm. Transport costs were reduced by approximately 500,000,000 rubles.

The bringing of order into inter-regional ties will facilitate the reorganization of the system of long-range and current planning of the national economy. The planning of inter-republic deliveries of industrial and agricultural products is a most important problem before the State Planning Commission of the USSR and the state planning commissions of the constituent republics. In turn, the planning of inter-regional deliveries within each constituent republic should be carried out by the state planning commissions of the constituent republics and the national economic councils, while within the economic administrative regions it should be done by the national economic councils and the enterprises.

	1st half of year		Increase (+) or decrease (-) relative to 1957
	1957	1958	
Average length of railway haul of which:	829	796	-33
coal	766	743	-23
coke	680	658	-22
ore	594	558	-36
ferrous metals	1130	1119	-11
ferrous metal scrap	715	687	-28
fertilizers	1306	1301	- 5
cement	681	711	+30
other industrial freights	872	829	-43

Prior to the reorganization of the system of planning of the national economy, inter-regional hauls were, for all practical purposes, beyond the purview of the USSR State Planning Commission and, moreover, of the state planning commissions of the union republics, although they constitute approximately 2/3 of the total volume of freight haulage by railway transport. The State Planning Commission of the USSR studied transport contacts among the districts of the country, but did not take effective measures to rationalize them. The State Planning Commissions of the union republics also did not, for all practical purposes, concern themselves with problems of rationalization of economic ties within the union republics for industrial freights of the enterprises subordinate to the union ministries. The inter-regional ties were determined by the marketing organizations of the ministries and departments. This inhibited rationalization of inter-regional ties.

Under present conditions, in which the State Planning Commission of the USSR is elaborating annual plans for inter-republic deliveries and the deliveries of industrial and agricultural products for the need of the union as a whole, and the state planning commissions of the union republics elaborate and confirm the detailed plans of supply with materials and equipment, the possibility exists of bringing active influence to bear upon improvement of inter-regional economic ties. This problem is solved by proper distribution of capital investments among the branches of the national economy and the regions of the country, proper utilization of production capacities with allowance for the assortment of products manufactured and the need of various countries for them, and also with the aid of specialization of enterprises and their cooperation in production.

We know that more than 20% of the turnover of the railways is accounted for by ferrous metallurgy: the delivery of iron and manganese ore, fluxes, refractories, coke, steam and industrial coal, and the export to the consuming regions of finished products: ferrous rolled sections, as well as cast iron and steel, utilized in the machinery manufacturing industries.

The impetuous development of the forces of production in the eastern districts of the country is accompanied by a sharp increase in the need for metal in these districts. Suffice it to say that shipments of ferrous metals from the Urals to Western and Eastern Siberia, the Far East, Central Asia and Kazakhstan rose approximately 150% from 1940 to 1955. There was also a rise in the haulage of ferrous metal from the districts of the South and Center to the eastern districts. In 1955 they were four times as large as in 1940. In recent years there has been a further increase in the volume of haulage of ferrous metals to the Eastern districts of the country. In turn, a large quantity of steam and industrial coal is hauled from Siberia to the Urals, the Volga area and the Center, along the railways. Inter-district cross hauls of coal and metal for distances in excess of 2,000 km. are increasing from year to year. The average intensity of freight haulage on the railroads linking the Urals and Siberia is the maximum possible, hauling attaining almost 50,000,000 tons per year.

The establishment of a third center of the iron and steel industry in the East will permit elimination of long-range hauls of ferrous metals from the Urals, the Center and the South to Siberia and the Far East, and a corresponding reduction in the hauling of coals from the East to the Urals. The prospected iron ore resources of Kazakhstan, Western and Eastern Siberia and the Far East will cover the iron ore requirements of the third center of the iron and steel industry now being built, and will establish a relatively uniform distribution of new iron and steel mills.

It is planned that the forthcoming seven-year period will see the construction of two large iron-and-steel works in the eastern portion of the country: the West Siberian and the Taishet, while the Karaganda Steel Works will be brought to full capacity, and the capacities of the functioning plants at Magnitogorsk, Chelyabinsk, Nizhny-Tagil and elsewhere will be increased. The Sokolovsko-Sarbay integrated ore mining and milling enterprise in Kustanai Oblast will go into full operation. Ore will move from here to the Magnitogorsk integrated enterprise and the Chelyabinsk Works. The ore resources here are so large that they could be used in the immediate future as the base for the building of a number of new iron-and-steel mills.

Not far from the Karaganda iron and steel works, the Atasui and Kentiube-Tagai iron resources have been prospected and opened to exploitation. Major resources of iron ore have been prospected in the Kuzbass and the Abakan-Minusinsk region. They will supply the Kuznetsk and West Siberian iron-and-steel mills. The Taishet plant will be based on the Angara-Ilim iron ore occurrence lying in the immediate vicinity of the Irkutsk-Cheremkhovo coal basin.

Ferrous metallurgy will develop in Siberia and the Trans-Baikal chiefly on the basis of the coking coals of the Kuzbass which, as we know, are the main source of this type of coal for the iron and steel industry of the Urals and Siberia.

In the further development of ferrous metallurgy, the

South Yakutia coal region, whose resources are comparable to those of Kuzbass and the Donbass, will play a very special role. Rich occurrences of iron ore have been found not far from the South Yakut coal basin. A large iron-and-steel works could be built on the basis of the occurrences of coking coals and iron ore here. However, exploitation of the coking coals of Southern Yakutia requires the construction of a railway north to Aldan from the Trans-Siberian, along the route: Skovorodino (Bam)-Chulman-Taezhnaya. Moreover, solution of this problem involves the prospects for the utilization of the coking coals of the Pechora for the metallurgy of the Northern Urals. The point is that development of the iron and steel industry in the Urals and Siberia requires an increase in the output of coking coals, which are currently provided by the Kuznetsk mining district, operating at a considerable level of strain. The Pechora basin, with its colossal supplies of coking and steam coals, is capable of serving as the base of fuel and power for the iron and steel industries of the North Urals. It is necessary to examine the question of the date for starting construction of the Skovorodino (Bam)-Chulman-Taezhnaya railroad.

100 km south of Kustanai there is the Ubagan lignite basin, having coal resources greater than that of Karaganda. Strip mining is possible at the largest occurrences in this field. The coals of Ubagan are not inferior to those of Chelyabinsk. With the construction of a new railroad, the distance that Kushmurun coal has to be hauled to Chelyabinsk will be about 400 km, and to Magnitogorsk — 360 km. Construction of a powerful thermal power station on the basis of the Ubagan steam coals will make it possible to convert the Akmolinsk-Kartaly railroad to electric traction and to provide power for industries at Orsk, Kurgan and Petropavlovsk.

Thus, the third center of the iron and steel industry being created in the eastern portion of the country, with an annual production of 7,500,000 tons of pig iron each year by 1965, will create the possibility of completely supplying the eastern districts with metal, and is a decisive factor in rationalization of the inter-regional economic ties.

Alongside of the upsurge of ferrous metallurgy in the eastern districts, it is planned to develop ferrous metallurgy in districts of the European portion of the USSR by completion of the Cherepovets and expansion of the capacity of the Lipetsk iron-and-steel works, and others. In Belgorod Oblast, thick veins of ore similar to the Krivoi Rog ores (they contain 60-69% iron) have been found, and these will facilitate development of the iron and steel industry of the South and Center. Mastery of the ores of the Kursk Magnetic Anomaly will make possible, in a more distant future, supply of iron ore to the Cherepovets mill, which is presently using Olenegorsk ore from the Kola Peninsula.

Acceleration of the rates of technical progress in all branches of the national economy is intimately related to the problem of increasing the power supply per worker. Electrification of industry, transportation and agriculture leads to an increase in the consumption of nonferrous metals, and requires an increase in the production of aluminum, copper, lead and tin. Technological progress also involves increase in speeds, in loads, high temperatures, reduction in the weight of metal fabrications, perfection of technologies, automation of the processes of production, introduction of telemechanics, etc. This is accompanied by an ever greater application of the rare metals (germanium, zirconium, lithium, beryllium, etc.)

Nonferrous metallurgy is one of the most power-consuming branches of the national economy. There is no need to point out that, in order to ease the load on transportation it is necessary to develop nonferrous metallurgy in districts having cheap electric power and an adequate supply of raw materials. The Eastern districts of our country possess enormous resources of fuel and power and, as has been demonstrated by geological research since the war, they have an adequate supply of raw materials for the development of nonferrous metallurgy.

The theses of the report by Comrade N. S. Khrushchev to the 21st Congress of the CPSU envisage a considerable development of nonferrous metallurgy in districts of Kazakhstan, Central Asia, the Urals and the Trans-Baikal. The cheap electric power of the eastern districts creates favorable conditions for the development of industries requiring large amounts of electricity, nonferrous metallurgy in the first place. This is where a considerable portion of the entire increased aluminum capacity in the country will be introduced. In Kustanai Oblast, south of Esil station on the Karaganda Railroad, the Turgai occurrence of bauxites has been prospected, and it is planned to erect the Pavlodar alumina plant on the basis thereof. A large part of the alumina will be processed at the Pavlodar aluminum plant, and the rest at other aluminum plants in Siberia. In Krasnoyarsk Krai, which has cheap resources of fuel and power, resources of nepheline syenites, a raw material for aluminum production, have been prospected not far from Uzhur station on the Achinsk-Abakan railroad. The Uzhur nepheline syenites are capable of supplying the production of a large amount of aluminum. The nepheline slags resulting from conversion of Uzhur nephelines to alumina can be used as raw material for the production of cement, as well as of soda products.

Construction of aluminum plants to use the Turgai bauxites and the Uzhur nephelines will make it possible to reduce the load on transport by approximately 40%.

The prospected resources of copper ore also make it possible to rationalize transport links. At present, more than half the raw materials used at the copper smelters of Sverdlovsk Oblast are hauled from Dzhezkazgan and the Southern Urals. All-round utilization of the resources of copper ore that have been found at the Volkov deposit (Sverdlovsk Oblast) will make it possible to refrain from long hauls of copper-containing raw materials, and also of apatite concentrates (from the Kola Peninsula).

It is planned, during the coming Seven-Year Plan, to expand the leading copper refinery in the country — the integrated Dzhezkazgan works. In addition it is planned to develop nonferrous metallurgy in the Kola Peninsula, the Transcaucasus and the Northwest. As the result of development of the copper industry in the east, the volume of work to be done by the railways will decline by more than 20%, according to the data of the planning organizations.

Of exceptional importance for rationalization of inter-regional economic ties is the fundamental improvement in the fuel structuring of the country planned for the coming Seven-Year Plan on the basis of priority rates of development of the petroleum-and-gas industry as compared to that of the coal industry (as we know, coal and petroleum represent almost 40% of the total freight on the railways).

The change in the fuel structuring of the country will be accompanied by a pronounced reduction in long hauls of large quantities of coal. An extensive program of construction of arterial gas and oil pipelines is projected. In 1959-1965 it is planned to build about 26,000 km of arterial gas and branches from them to the cities, as well as over 25,000 km of petroleum refinery products pipelines. This will make it possible to cease hauling a large amount of coal by rail. In accordance with an approximate estimate, the increase in the use in the national economy in 1959-1965 of natural and by-product gas will result in freeing railway transport from the haulage of coal to a total of 300 billion tkm net weight, which is equivalent to about 1/4 of the present total freight turnover on the railways.

However, high rates of development of the petroleum and gas industry are possible only on the condition that it be provided with the requisite geological resources of petroleum and gas. In the postwar period, the districts short of coal lying between the Urals and the Volga were found to contain stupendous reserves of petroleum. The oil supplies found in Bashkiria, Tataria and Kuibyshev Oblast made it possible to improve the geographical distribution of the petroleum extraction industry.

In addition to major petroleum resources, the postwar period witnessed the discovery of major occurrences of natural gas in Stavropol Krai, in the Dnepr-Donets depression, in the lower reaches of the Ob' (the Berezovo occurrence), and in districts along the Volga and in Uzbekistan. This made it possible to develop intensive construction of arterial gas lines: Serpukhov-Leningrad, Saratov-Gorky, Karadag-Kirovabad-Akstafa, with branches to Tbilisi and Yerevan, and Dzharkak-Bukhara-Samarkand-Tashkent, etc.

The very large arterial gas lines provide cheap fuel to a large number of cities making possible its use as chemical raw material and intensification of the production processes in many branches of industry, improvement of sanitary conditions, etc., and also making possible rationalization of inter-regional shipment of fuel. Suffice it to say that the Stavropol-Moscow gas line, which, 1300 km long, is the largest in Europe, permits the transmission of a vast amount of gas per year and serves, for all practical purposes, to replace a major railway artery. The cost of transmitting gas to Moscow, calculated in conventional fuel units, is approximately 2 kopeks per tkm as against 4-4.5 kopeks per tkm when the same amount of Donets coal is shipped to Moscow by rail. The Stavropol-Moscow gas line and the gas lines laid previously make it possible to reduce coal consumption in Moscow from 7,600,000 tons to 800-900,000 tons per year and thus to ease the load not only on rail but on truck transport used to ship coal into the capital.

The discovery of a gas deposit in the vicinity of Bukhara is of vast significance to the Central Asian Republics and to the Urals. In this district, the resources of natural gas constitute about 1.3 trillion cubic meters. We know that the Uzbek SSR alone today imports more than 4,000,000 tons of Kuznetsk and Karaganda coal. As a result of the discovery of the Bukhara gas occurrence, the share of gas in the fuel balance of the Uzbek SSR will rise from 3.3% to 60% in the coming seven years. Construction is under way on the 650-km Bukhara-Tashkent line, to be followed by the 1800-km Bukhara-Chelyabinsk and the 2100-km Bukhara-Tashkent lines. The fuel and power balance of the Urals will undergo qualitative transformations as the result of the construction of gas lines for the transmission of natural gas from the vicinities of Bukhara, the Komi ASSR and the northern districts of Western Siberia, as well as the construction of power lines from the Volga to the Urals. Intensive development of the petroleum-and-gas industry in the regions of the Tatar and Bashkir republics and Kuibyshev Oblast will make it possible to supply petroleum gas fuel for the thermal power plants being built in the Urals. With increase in the utilization of petroleum gas fuel in the Urals during the coming seven years, the haulage of steam coal from Karaganda, Kuzbass and Ekibastuz will be cut by approximately two-thirds.

The increase in the share of gas and petroleum fuel in the fuel structure of the republics, particularly of those short of fuels, will make it possible, by the end of the Seven-Year Plan, to reduce the shipment of coal to the Armenian, Belorussian, Lithuanian, Latvian and Azerbaidzhan republics by a factor of 1.5 to 2. The present seven-year period will see the cessation for all practical purposes of shipment of long-haul steam coal into the Trans-Caucasus and a sharp reduction in such haulage into the fuel-short regions of the Volga, the Northwest, the West, and Central Asia.

Significant changes in inter-regional economic ties will also occur as the result of the carrying out of other measures envisaged by the control figures. Thus, in the cement industry the launching of new cement plants will result in a significant reduction of the hauling of cement. At the end of the seven-year plan cement will be produced in almost 70 regions, while now it is being produced in 48. The development of the chemical industry on the basis of utilization of natural gas, and in particular the construction of new nitrogen fertilizer plants in Fergana and Bukhara, will create the conditions for increasing the production of mineral fertilizers in districts of Central Asia to which mineral fertilizers are now shipped from districts in the European portion of the country. The discovery of the Rasdolye sulfur occurrence in the West Ukraine will have a positive effect on rationalization of inter-regional transport.

As we know, sulfuric acid is utilized in substantial quantity in the production of superphosphate from Khibinogorsk phosphorites. However, in view of the fact that it is not suited to transportation, sulfuric-acid producing departments using sulfur-containing raw materials have been established at superphosphate plants. Railway and river transport annually transport hundreds of thousands of tons of Ural pyrites to the Neva (Leningrad), Voznesensk, Riga, Konstantinovka (Donbass) and other superphosphate plants. The average length of haul of pyrite by rail is approximately 1,350 km. Use of the Razdolye sulfur to manufacture sulfuric acid will free transport of the need for long hauls of sulfur-containing raw materials from the Urals.

The construction of the broad-gauge timber-carrying railroads from Achinsk to Abalakovo and from Reshety to Buguchany, and the development of a large-scale paper-and-pulp industry in the forested districts of Siberia will also make it possible to do without long hauls of raw timber from Siberia to the European portions of the country and to organize shipments of more readily transportable products of the saw-milling and wood-working industry.

The construction of 35 to 500 kv transmission lines in the forthcoming seven-year period, the increase in total length thereof by approximately 2.5 to 3 times, and the creation of unified power grids for the European portion of the USSR and for Central Siberia will increase the possibilities of long-distance transmission of electric power and will thus facilitate relieving the railways of shipment of large quantities of coal.

The development of the eastern districts of the country will require the growth of all forms of transport and the reconstruction of inter-regional and intra-regional transport ties. The control figures for 1959-1965 envisage redistribution of the freight turnover among the various types of transport with the purpose of relieving the load on the arterial railroads and increasing the share of water, automotive and pipeline transport in the whole. While the turnover of railway transportation from 1959 to 1965 will rise by 40-45%, that of maritime transport will approximately double, that of the riverways will rise by 60%, that of pipelines by a factor of 5.6 and that of automotive transport by 90%.

The interrelated development of the various types of transportation and their efficient coordination will make for the most productive utilization of the transportation system of the Soviet Union and rationalization of inter-regional transport ties, constituting a most important reserve for reducing the cost of production of the economy as a whole and increase in the productivity of social labor.

Grandiose perspectives are opening before railway transport. A characteristic feature of the development of railway transport in 1959-1965 is its basic re-equipment. During this period, electrification will be introduced on the most important arteries: Moscow-Kuibyshev-Irkutsk-Far East, Moscow-Gorky-Sverdlovsk, Moscow-Kazan-Sverdlovsk, Karaganda-Magnitogorsk-Ufa, Moscow-Kharkov-Rostov-Mineralnye Vody and others. The total length of line to be converted to electrical and Diesel traction in 1965 will be approximately 100,000 km.

As the result of the basic technological re-equipment of railway transport, the productivity of labor on the railroads of the USSR will rise by 34-37% by 1965 and will exceed the present level of labor productivity on the railroads of the USA. The cost of railway hauls will drop by approximately 22%. This will signify economic approximation of the districts of production and consumption, and a corresponding diminution in inter-regional economic ties in the country by an average of more than 20% of their present length.

The establishment of more rational inter-regional ties will be facilitated by the construction in the upcoming Seven-Year Plan of a number of new railroads to straighten out existing lines.

1959-1965 will also see fulfillment of a broad program of construction and reconstruction of All-Union, republic-wide and Oblast highways, including approaches to cities and industrial enterprises. This will make it possible to increase the transfer to automotive transport of a considerable portion of the freight now carried by the railways.

In view of the separate administration of railway and automotive transport, an important problem is the coordination of the plans of development of these forms of transport on a regional basis so as to provide the most efficient possible coordination thereof.

E. Manevich:

The Principle of the Personal Incentive and Certain Wage Problems in the USSR

The theses of the report by Comrade N. S. Khrushchev on the control figures for the development of the national economy of the USSR in 1959-1965 outline a program for further significant uplift of the living standard of the Soviet people on the basis of development of socialist production and rise in the productivity of social labor. In order to create the abundance of products that will guarantee the transition to communism — the theses emphasize — the principle of personal material incentives to all personnel for growth in social production is of major significance.

Marxism-Leninism teaches that during the first phase of communism the level of development of the productive forces and the nature of the relationships of production give rise to the need to utilize the personal material interest of the working people in the results of their labor, or in other words the distribution of consumer goods in accordance with the quantity and quality of labor.

With the victory of socialist relationships of production, there is being established, for the first time in the history of mankind, a harmonious coordination of the social and personal interests of the working people. An indissoluble unity exists between the personal and social stimuli for labor under the conditions of socialism. Each participant in socialist production is interested both in increasing the individual productivity of labor and the productivity of labor at the given enterprise (leading directly to an increase in the income of the personnel of the enterprise) and in growth in the social productivity of labor, resulting in an increase in the well-being of the people as a whole.

Socialist society, in realizing the principle of rewarding personnel in accordance with the quantity and quality of their labor, provides — unlike capitalism — a just distribution of the products of social labor among all its workers. Payment in accordance with the quantity and quality of labor is, during the first phase of communism, that form of distribution which permits all members of society to reveal and develop their abilities in the most rounded way. However, under these conditions that higher stage of equality of the members of society that can be provided only by communism, with its principle of distribution of consumer goods in accordance with need, is not yet attained.

With the development of the productive forces and the relationships of production, with the development of the communist upbringing of the masses, a transition to realization of communist distribution in accordance with need is prepared. Until the abundance of products needed for transition to communism has been attained, until the significant differences between town and country and between mental and physical labor are achieved, until labor becomes the first necessity of life for the entire mass of members of society, cessation of distribution in accordance with labor and rejection of the principle of personal material incentive would be a distortion of Marxism, interfering with our further progress.

The Communist Party of the Soviet Union has always conducted a consistent struggle against all efforts to "replace" distribution in accordance with labor by petty-bourgeois equalitarianism in the payment of labor. During the trade union discussion (1920), V. I. Lenin exposed the theses of Trotsky, harmful and isolated from life, to the effect that in the field of distribution it is necessary to pursue the line of equalitarianism, while in the principle of production the shock principle is to be applied. Lenin said: "This is utter theoretical confusion. This is absolutely false. He who distinguishes himself by shock work should be favored in consumption. Without this the shock principle is a dream, a chimera, and after all we are materialists."[*] In his speech at the III All-Russia Conference on Food (1921), V. I. Lenin again subjected the equalitarian approach to distribution to a bitter critique: "When the question is one of distribution of foodstuffs, to think only of just distribution is out of the question; what must be borne in mind is that this distribution is a method, a tool, a means for the increase of production."[†]

Our economic history contains efforts by right-wing opportunists to instill equalitarianism in the payment of labor. They caused a given amount of harm to the organization of wages, and this in turn was reflected upon the level and rates of growth of labor productivity.

For a long period we did not achieve adequately flexible and all-round utilization of the factor of personal material incentive in the development of agriculture. In the resolution of the September (1953) Plenum of the CC CPSU "Measures for Assuring Further Progress in the Agriculture of the USSR," it was noted that one of the major causes for the developing lag in a number of most important branches of agriculture was the violation, in agriculture, of the principle of material incentive to personnel in the development of production and in increasing its income — one of the fundamental principles of socialist business operations.

The many years of experience in the organization of social labor under socialism have shown that equalitarianism is incompatible with the interests of the development of socialist production.

However, the struggle with equalitarianism in the field of distribution does not mean the need for or desirability of excessive differentiation in the payment of labor. On the contrary, such differentiation contradicts the law, operative under socialism, of distribution in accordance with the quantity and quality of labor expended. Socialist society is the most humane of societies. That which is of major interest to it is the interests of each individual, his life and well-being. This involves consideration of the fact that the composition of the worker's family differs from one case to the next, with variations in the number incapable of working, etc. Therefore, under the conditions of socialism, a significant and ever-increasing role is played by all kinds of payments to workers and white collar people out of funds for social and cultural activities, pension servicing of those incapable of labor, assistance by the government in the upbringing of children, etc.

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[*] V. I. Lenin, *Collected Works*, Vol. 32, p. 10.

[†] *Ibid.*, p. 425.

The relationship between the minimum wage rates are conditioned by a number of factors: the historically conditioned level of life of various groups of working people, and the need for material reward to workers in acquiring higher skills and professions. But socialist society cannot permit excesses of any kind in payments to particular groups of working people.

For many years the spread in wages was small but adequate to reward skilled labor and labor involving high responsibility. However, on the eve of the Great Patriotic War, during the war and in the course of the first postwar five-year plan, an excessive differentiation between maximum and minimum payments came into being in a number of cases. For example, at many enterprises the actual earnings of skilled workers came to be from 4 to 8 times as great as those of the unskilled. The wages of the highly-paid group were several times as large as the average wage of workers in the low-paid groups. At the 20th Party Congress it was noted that, in addition to the low-paid group of personnel there exists a category of people — small it is true — whose payment included completely unjustified excesses, and the need was noted for elimination of the exceptional disparity between the wage of the low-paid categories of workers and office personnel and that of the high-paid categories. The Party and government are taking steps to reduce the unjustifiably large difference in the payments for the labor of various categories of workers. One of these measures is that of increasing the wages of the low-paid groups of workers and office personnel and of some reduction in the salaries of scientists, top-level government personnel, etc. Toward this end, most of the branches of industry are replacing the present 8-, 10, and 12-category wage scales by 6- or 7-grade scales in which the ratio of the extremes (minimum to maximum) is 1:2. In the theses of the report by Comrade N. S. Khrushchev at the 21st Congress of the CPSU it is pointed out that the gradual regulation of the wage system will take the form of an increase in the wages of the lowest and middle categories of workers and office personnel and the attainment, in this way, of a reduction in the disparity between payments to these groups and to the high-paid groups. Consequently, as the productive forces of the country increase, the spread between the payment of the labor of workers in the lowest and highest skills will diminish.

In connection with the efforts now under way in our country to bring order into the matter of wage payment, a number of theoretical and practical questions of socialist organization of the payment of labor take on special importance. In particular, the question of the objective factors underlying wages under socialism is most important. It must be stated that this question has been given little elaboration in our literature.

What are the objective factors underlying wages under the conditions of socialism?

To answer this question, it has to be divided into two independent, although interrelated questions. In the first place, what is it that determines the wage level under the conditions of socialism and, in the second place, what determines the organization of wages, i.e., its differentiation, the organization of the rate of payment, the construction of the rate system, the forms of payment for the labor of workers, engineering and technical personnel and office workers?

The objective factor that determines the level of wages under socialism is the provision to workers and office workers of the means of existence in a volume requisite to the reproduction of their labor power.

The level of wages under the conditions of socialism is not something invariable and constant. It is quite mobile and elastic. Its function is to satisfy the historically conditioned and constantly increasing needs of the working people, which are economically assured under the given conditions of reproduction.

A most important feature of the socialist mode of production is the direct relationship between the level of wages and the development of the forces of production. This relationship represents the vast superiority of the socialist economy over the capitalist. While, under the conditions of capitalism, only a small portion of the national income comes into the hands of the working people, for wages are a transmuted form of the value of labor power and the "ceiling" thereof can only be the value of this specific commodity, under the conditions of socialism the impetuous development of the forces of production assures vast possibilities for increase in wages. Therefore all members of a socialist society have a material interest in increasing the productivity of labor, in the development of the forces of production, and in increasing the national income.

At a given degree of development of the productive forces and the historically-conditioned level of consumption needed for reproduction of labor power, the level of wages depends to a significant degree upon the concrete political and economic problems faced by the country at any given stage in the upbuilding of communism. In various historical periods these factors may play and in point of fact do play an important role in determining the level of wages and the living standard of the working people in general. However, in establishing the wage level and determining the optimum relationships between accumulation and consumption, consideration is always given to replacement of the outlays involved in the reproduction of labor power and the growth in the needs of the working people in accordance with the development of the productive forces. Any long-term violation of the requirement that there be replacement of the expenditures involved in the reproduction of labor power will have negative consequences in economics, serious shortcomings in the payment of labor, violation of the economic law of distribution in accordance with labor, the law which governs the organization of wages under socialism.

As we know, the fundamental shortcoming in the current organization of the wages of workers in the USSR is the exceedingly low level of rates as compared to the actual and planned wages. This situation has the result that at many enterprises, quotas are established, or, more accurately, "deduced," which are readily capable of overfulfillment by the majority of workers. This is due not only and not so much to the fact that we do a poor job of fixing rates, but to the fact that low quotas are one means of correcting the low rates, which do not correspond to the level of wages actually in operation. In cases, in which enterprises use quotas based on engineering studies, various corrections are often made in them (so-called factors of correction), which actually equalize these quotas based on other, unjustified quotas, termed experimental-statistical. These quotas are overfulfilled by 50% or 100%, and this results in a rise in wages relative to the long outdated, low scales.

In order to overcome the disparity between the level of wage rates and the planned wages, and to raise the wages of the lower-paid workers, plant management not infrequently upgrades workers arbitrarily. Many unskilled workers are classified in higher categories. Not infrequently there are no workers at all listed in the lowest grades. At enterprises whose quotas are more or less justified, the disparity between the formal rates and the actual wages are also "overcome" by introducing various incentive systems: piecework, piecework-plus-bonus, progressive, job rates, etc. Therefore, in a number of cases, incentive systems that in themselves are economically efficient, are employed not to stimulate the further increase in labor productivity, saving of materials, and reduction in the cost of production, but merely to provide the worker with the going wage level. This does much harm to the entire organization of wages.

The work now being conducted to bring order into the wage system is directed primarily to a sharp upswing in scales so as substantially to increase their role in the overall payment of wages. A very important role in the uplift of the living standard of the working people, and, in addition thereto, in straightening out the wage picture is played by the proposed increase in the monetary wage to the lowest-paid workers and office personnel during the seven-year period from 270-350 rubles to 500-600 rubles per month. The minimum wage will increase 70% to 80%, and the average wage of workers and office workers will rise by 26%. Moreover, the living standard of the working people will rise as a result of the annual rise in government expenditures for social and cultural purposes. In 1965 these funds will rise by 130,000,000,000 rubles over the 1958 level, and will be used for assistance to mothers of large families and without husbands, for maintenance of homes for the aged, payment of pensions, etc. Of no small significance for improvement of the living standards of low-paid groups and, in particular, for enforcement of the provision for universal compulsory education of children will be the creation of the compulsory education fund. This fund will be used to provide material aid to needy children (free food, shoes, clothing and books). It is also planned to expand the network of children's institutions, primarily boarding schools, groups remaining after school for recreation and homework under proper supervision, etc. On the whole, the real incomes of workers, office workers and collective farmers will rise by not less than 40% during the coming Seven-Year Plan.

All these measures will provide for a significant rise in the well-being of all the working people and in particular of the low-and middle-pay groups of our population.

One of the major questions in the organization of wages is that of its differentiation, i.e., of the required differences in payment to labor. Under the conditions of socialism, differentiation in wages is determined by the demands of the economic law of distribution in accordance with work. Inasmuch as the distribution of consumer goods proceeds in accordance with the quantity and quality of labor expended, the wage rates fixed for workers and the monthly salaries of engineering and technical personnel and office workers should be differentiated in accordance with the quantitative and particularly the qualitative results of labor.

The most important factors in the differentiation of the earnings of wage-and-salary earners in the USSR are their skill and conditions of labor. These, in turn, are dependent upon changes in equipment and methods of production. Workers spend time in acquiring their skills, usually in direct proportion to the degree of skill. Under capitalism, the expenses involved in acquiring an education, and particularly in gaining skill, are usually borne by the workers themselves. Under socialism virtually all expenditures upon education and the training of a skilled labor force are borne by the state. However, during the first phase of communism, differentiated payment has been established and mu necessarily be, based on the skill of the worker, because skilled, or in other words complicated labor creates more value in unit time than does simple labor. Moreover, the acquiring of skill involves the need for the worker to spend definite amounts of time, from time to time, on recreation and rest; it involves no small effort, concentration, energy and will. Furthermore, the stipend paid to students in the higher and medium-grade special educational institutions is usually lower than the wage he could get in a factory, plant, state or collective farm. All this has to be compensated for by society in some way. Skilled workers represent a tremendous value, the major accumulation of riches on the part of society. Marx wrote, that "the reserves of commodities previously produced (means of existence) are always insignificant as compared to total consumption and production. Contrariwise, the level of skill of the present population is always a precondition for production as a whole, and consequently the chief accumulated wealth, the most important preserved result of past labor, which exists, however, in living labor."* The presence of an adequate number of skilled workers, and also of high-skilled, educated managers, engineering and technical personnel, and office workers, is a most important factor in the raising of labor productivity.

The Soviet government, which ascribes exceptional significance to the training of skilled workers and improving their level of knowledge, has always provided higher pay to skilled labor. Differentiated payments to labor have played an important role in the training of skilled personnel in the years of socialist industrialization of our country. Thanks to this, and also to a number of other measures, millions of skilled workers of various professions and specialties were trained in the USSR in a relatively brief period. Although the growth in the population of the USSR from 1926 to 1939 was 16%, the total number of workers and office personnel increased by 150%, and the number of skilled workers (machinists, electricians, milling machine operators, etc.) by 6- to 14-fold. The number of engineers and technicians, scientists and cultural figures also increased substantially during these years. As yet we have no overall data on the increase in skilled personnel subsequent to 1939. These figures will be obtained as a result of the census of 1959. There can be no doubt of the fact that during the past 20 years there has been a process of rapid increase in the number of highly-skilled workers and engineering and technical personnel in all branches of the national economy and culture.

Further development of socialist production demands continuous provision of more skilled workers and engineers and technicians to the national economy. Therefore, in the future as well, it is necessary to employ the factor of personal material interest in the training of new personnel and a systematic increase in the skill of those already at work.

As we know, the level of differentiation of wages depends upon the difficulty and the conditions of labor. The progress of technology, and in particular the mechanization and automation of the processes of production, results in progressive elimination of manual labor, and in making heavy labor easier. However, there are many enterprises where departments may be found in which heavy labor is required and where people have to work under conditions harmful to their health. Higher wage rates or salaries are provided to compensate for the additional expenditures due to the severity of the labor and special conditions of labor at socialist enterprises. Differentiation of wages in accordance with the laboriousness and conditions of labor is also necessary as an economic stimulus to bring workers to these types of jobs. In this connection it should be noted that in addition to the increased wage rates these workers obtain a number of other types of compensation (shorter work day, longer vacation, special foods, etc.).

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* K. Marx, Theories of Surplus Value, Vol. III, 1932, p. 229 (Russ. ed.)

However, the existing differentiation in wages in accordance with the severity and the conditions of labor presents a number of inadequacies. For example, let us suppose that a higher rate has been set for jobs (or workers) in the 1st category. As a result, compensation for heavy labor is the greater, the higher the classification of the worker. Consequently, the highly skilled worker will get a larger compensation if he is engaged in the same heavier work or works under the same conditions as an unskilled worker. This kind of differentiation in pay is unjustified. It would appear that the time has come, as many workers in the field suggest, to re-examine existing practice, and to pay more or less identical bonuses for heavy work to workers of the lower and higher skills, if they find themselves under identical conditions.

Differentiation in rates and pay as a whole is also performed in accordance with the district in which the enterprise is located, the branch of industry, and the forms of salary employed.

In view of a number of factors (the approach of the now-dissolved ministries to differentiation of scales in the various districts of the country in accordance with branch of industry, the fact that scales have become outdated, etc.), there are serious shortcomings in the differentiation in wages that has developed. In particular situations this results in an incorrect relationship among the salary categories and constitutes one of the causes of labor turnover within given districts, and makes it difficult to attract workers to the distant and underpopulated districts of the country, where added labor is required.

Serious shortcomings exist, in particular, in the regional differentiation of wages. For a long period, wages were differentiated by geographical belts set up independently by each ministry and department. The result was a pronounced lack of coordination in differentiation of wages from district to district. In a number of branches of industry (the manufacture of machinery, chemicals, textiles, glass, paper, meat-packing and the dairy industry) there is no regional differentiation whatever. At the same time, the wages of workers in enterprises in other branches of industry were set in accordance with the belt in which these enterprises were located. Moreover, the differentiation by belts was often accidental and poorly-founded. For example, wages of the workers in the silk, and the flour-and-molasses industry are differentiated into two zones, that of the lumber industry into three, that of the coal, sawmilling, furniture and match industry into four, that of the petroleum industry into ten, that of cotton mills into eleven, etc. Each branch of industry had its own principles for the establishment of zones. Thus, in lumbering, natural conditions of climate were taken as governing, the shoe and baking industry followed governmental boundaries, etc. There was no reasoned difference in the wage level in the various districts, and the existing division of the territory of the USSR into belts for retail pricing of consumer goods was not taken into consideration.

Basic regulations for the payment of labor are now being elaborated. They provide a uniform approach to regional differentiation of wages for all branches of industry. This takes into consideration such objective factors as the established standard of living, government prices for consumer goods, distance from the national centers of culture, the need for material stimulus to an influx of labor power, particularly in the eastern and northern districts of the country.

A proper and scientifically-founded differentiation in wages for the various districts of the country takes on particular importance in connection with the reorganization of management in industry and construction, and with the problems of further development of the productive forces of the country. It must eliminate the unjustified differences in payments to workers in a single district doing the same work but under different conditions.

A scientifically justified differentiation in the payment of labor from one branch of industry to the next is of major importance. To this day, the scales paid to workers and the salaries to managerial and engineering-and-technical personnel in some departments is higher than in others, for no adequate reason. Differentials in wages have often resulted merely from the question of whether the given enterprise is under all-Union, republic-wide or local control. As a result, we know that in a single district (and sometimes in the same town), workers in different enterprises performing identical functions have been paid differently. In determining the level of wages, it is necessary to define the role played in our economy by one or another branch of industry, and in particular what are the conditions of labor in enterprises of a given branch. This results in an economic stimulus to the influx of workers into the decisive branches of the national economy and they acquire an interest in continuing to work at the given enterprise. However, such differentiation has to be based on reason, and not upon transient or accidental circumstances.

Differentiation in wage level based upon forms of payment also exists, in virtually all branches of the national economy of the USSR. Thus, higher rates are set for piece than for time workers. This compensates for higher intensity of labor on the part of piece workers, and, in case they don't meet the quota they are guaranteed no smaller a wage (particularly in the case of young workers who have just entered industry) than are time workers of the same skill. The scales for piece workers are set at levels 10% to 15% higher than for time workers. But at the present time the spread between the true earnings of piece and time workers is excessive. Thus, a selective study of machinery-manufacturing enterprises in 1956 showed the average wage of all the piece workers studied to be 33% higher than that of workers on time payment, while the difference was 60% for workers in the 3rd, 4th and 5th grades. At some enterprises (for example, the Moscow "Compressor" Works), the earnings of piece-workers were twice those of workers in the same grades paid on a time basis. Similar, and sometimes greater spreads in actual earnings exist in many enterprises in other fields (the building materials industry, the paper industry, etc.). Sometimes the actual earnings of piece-workers in the middle grades are substantially higher than those of highly-skilled workers on time payment.

So unjustifiably great a spread in the real payment to labor is a consequence of the same shortcomings in the organization of wages of which we spoke above (low ratio of scale to actual wages, the existence of unjustified incentive systems, and the utilization of low quotas determined by experiment and statistical manipulation). Consequently, in order to establish a correct system of differentials in payment to labor, it will be necessary to bring order into the organization of the wage system as a whole.

After the 20th Congress of the CPSU, considerable work was done in our country to bring order into the wage system.

In 1956-1958 a number of measures were carried out to improve the organization of wages in the Ukrainian coal industry, the ore mines, the steel mills and coke-and-chemical enterprises in ferrous metallurgy, the workers and office workers of enterprises in the machinery, petroleum and gas industry, the construction workers, personnel of particular plants in other branches of industry, state farms, and also the workers of certain fields outside production (scientists, purchase and sales personnel, conductors on buses, streetcars and trolleybuses, personnel of the Procurator's office and the courts, and workers in the book trade). All-in-all, the systems of payment to approximately one-quarter of the total number of workers and office personnel in the country have been reorganized to a greater or lesser degree during the past three years.

As a rule, adjustment of wages is accompanied by an increase therein. Thus, the wages of miners working underground have risen by 30% on the average, and that of workers at the face has gone up by nearly 40%. The earnings of workers in the iron and steel industry of the South and Center rose by 22%-34%, etc.

The measures carried out have already yielded positive results. Thus, after the increase in the scale for workers underground in the Donbass coal industry, and the introduction of payment per ton of coal to the worker at the face, there was increased incentive for all workers (both producing and auxiliary) in the fulfillment and overfulfillment of the plan for the mining of coal. This was also facilitated by the establishment of multi-skill teams based on a considerable mastery of more than a single skill and the introduction of a single, collective bonus. At the same time, note must be taken of the inadequacies of the new system of organization of the labor force and the payment of wages in the coal industry of the Donbass. The shift from payment of bonuses by monthly to weekly results did not justify itself. In a number of cases, substantial bonuses were paid for work for particular weeks, while the monthly plan of coal production was not carried out. For example, the total sum of bonuses paid in the Stalinugol' Combine in January, 1958, came to over 6,400,000 rubles, yet the plan of coal production for the month was not fulfilled. Nor did the introduction of a single wage scale for the 25 skills required at the face prove justified. Proper organization of labor is hardly promoted by establishing a single wage scale for coal-cutting machine operators, timber-men, etc. The shortcomings in the organization of wages had a negative effect upon the quality of the work and resulted in an increase in the cost of the coal. Some of these shortcomings in the organization of payment for the labor of workers in the Donbass coal industry have been taken into consideration in the elaboration of measures to correct the wage system in the coal and shale industry as a whole, and also in certain other branches of industry.

In connection with the reorganization of the administration of industry and construction, the question of the purposes and functions of the central and local institutions in the organization of wages has become quite pressing. Under the new conditions the need for centralized determination of wage rates and, above all, a centralized establishment of proper, scientifically founded relationships in the payment of labor by economic districts and branches of industry, has become greater. Grade-and-scale handbooks, salaries payable in accordance with size of staff, and bonus systems to management, engineering and technical personnel, and office workers, also will have to be worked out centrally in the future.

The need for a sharp improvement in the system of payment to the technical intelligentsia has also come to a head. The first thing required is the development and introduction of a single, scientifically-founded system of salaries for particular duties, permitting a correct and properly flexible reckoning of the results of one's labor and material reward to creative activity on the part of various workers. Salaries for particular duties must be scaled to such objective indices as the volume of work performed, its complexity and the responsibility attaching to it, length of service, education and special training of the individual, conditions of labor in the given branch of the economy and the district.

Of particular importance is the question as to the ratio between minimum and maximum salaries for each grade of engineering, technical and office worker. In our opinion, it is necessary to give industrial and institutional management the right to raise the salaries of persons showing maximum initiative, capacity and conscientiousness. In this connection it is necessary to re-examine the practice that has developed of listing staffs with the local financial institution.

At the same time it is necessary to improve the system of bonuses to managerial, engineering, technical, and office personnel, and to the personnel of enterprises as a whole. V. I. Lenin, emphasizing the exceptional importance of bonuses said "this is an institution to be regarded as among the most important in terms of its role in the upbuilding of socialism."[*] The existing regulations governing the issuance of bonuses suffer from serious shortcomings. In the first place, they do not provide a material incentive in increasing planned output. On the other hand, inasmuch as bonuses are paid to the entire personnel of an enterprise (including the manager and the chief engineer) for fulfillment, and an added bonus is paid for each per cent of overfulfillment of the monthly plan of output of production for the market, under the condition that the plan be met as to gross output, cost and assortment, then, the smaller and easier the planned goal, the greater, as a rule, are the possibilities for fulfilling and overfulfilling it and consequently for obtaining bonuses. This shortcoming in the present bonus system often leads to under-utilization of the means at hand for raising production.

Further, the scale of the premiums currently being paid out to management and engineering-and-technical personnel is not dependent upon the degree of overfulfillment, by the enterprise, of the plan for reducing the cost of production. Bonuses are paid without consideration of the degree to which the quantitative and qualitative indices of the plan have changed relative to the past. And as the volume of production is continually rising, and the goals for reduction of cost of production are constantly becoming higher, it becomes harder and harder for the personnel of enterprises to carry out and, particularly, to overfulfill, the plan. The scale of the bonus remains the same. Therefore, alongside cases of downright excesses in the payment of bonuses to various groups of managerial and engineering and technical personnel, the scale of the bonuses received by engineers and technicians is continually declining. This diminishes the role of the bonus system as stimulant. The present bonus system does not give managerial and engineering-and-technical personnel a material interest in assuring that departments and enterprises function rhythmically. Not infrequently personnel get higher bonuses when the plan is substantially overfulfilled once each quarter than if it is fulfilled each month.

One of the substantial shortcomings of the present system of bonus payments lies in the fact that it provides little stimulus to managerial and engineering and technical personnel to introduce new equipment. This is due, in the first place, to the fact that introduction of new equipment requires that personnel take some risks and also requires a great deal of time; in the second place, by the fact that introduction of new equipment is followed by introduction of plans on which there is less leeway and consequently there is a reduction in the possibilities for fulfilling them and getting bonuses.

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[*] V. I. Lenin, Collected Works, Vol. 32, p. 370 (Russ. ed.)

The present bonus system does not envisage rewards to engineering and technical personnel in accordance with the results of the work of the enterprise in the course of the year. This diminishes the incentive to them to improve the quality of operations at the enterprise.

Thus, the need has arisen for a fundamental reorganization of the system of bonuses to managerial, engineering and technical personnel, and office workers. It would be desirable to test in practice systems of bonus payment in which fulfillment of the plan is required, but is not the chief condition for receipt of a bonus. Bonuses should be paid for increasing output or for reducing cost relative to the previous calendar period. (An experiment in this direction is now under way in some enterprises in the Gorky national economic council).

In those branches of industry where this is possible (where there are enterprises having more or less identical working conditions, standards of equipment and organization of production), it would be desirable to experiment with the introduction of a system of bonuses based on the actual reduction in cost of production at the given enterprise as compared to the actual average reduction for that branch of industry as a whole. Introduction of such a system would increase the incentive to the personnel of such enterprises to reduce the average, socially necessary expenditures and to make maximum employment of possibilities at hand.

The individual enterprise must be given more freedom to improve the organization of wages. As the process of production is organized primarily in accordance with the structure of the given enterprise, the manager must have the right to choose the particular specific wage system to employ, naturally within the framework of the scale and the total wage fund in effect. For example, a number of enterprises in the cement industry, and coal mines, have a system of payment based on the output of finished product. This system creates a direct material incentive to the workers to increase production and the total finished product at the given sector of production, to be usefully occupied during the entire working day and to cut loss of time. This should be done by the device of workers learning additional skills and assisting each other, and by improving their skills and combining the functions now done by workers of different skills. Under the specific circumstances, this system justifies itself, as it makes for a growth of production. It should be recommended for use in similar types of operation.

As we know, a number of piece-wage systems have come into undeservedly wide use in recent years, in connection with the fact that the system of pay scales has become outdated. The use of straight piece-work, progressive piecework and indirect piece-work is often entirely unjustified, as it serves only to provide a mechanical uptrend in wages and does not assure good-quality production. Moreover, there are some enterprises where the piece-work system is used when there is no need to get out production over the plan and consequently there is no need for the workers to overfulfill their quotas. It is not desirable to use piecework on certain jobs governed by the equipment employed, in assembly-line work and on automatic lines.

The experience of a number of plants in the machinery industry has shown that a raising of scales has made it possible to eliminate the use of fictitious piecework systems in some departments. The result has been that the proportion of workers on piecework in these plants has dropped from 74% to 62%. At the Moscow Kalibr Plant, the transfer of workers of the heat treatment department from piece work to time-plus-bonus payment resulted in a 34.1% drop in rejects. In some shops, workers have been shifted from wages to salaries.

Piece-work has also been reduced at enterprises in the iron-and-steel and coke-chemical industries. Prior to the reorganization of the wage system, 70.2% of all workers of the enterprises sampled were on piece work, while afterward the figure was only 66%. A particularly sharp drop occurred in the progressive piecework system, from 42.7% to 6.1%. The piecework plus bonus system rose from 8.3% to 44.8%, and the time-plus-bonus system from 28.6% to 31.5%.

This, needless to say, does not mean that, at the given stage in the development of socialist industry, the piece-wage system has ceased to be the main form of wages. The advantage of piecework over time payment under the conditions of socialism are quite great. It increases the workers' material interest in increasing labor productivity, provides the best available objective monitoring of the quantity and quality of labor and is a necessary prerequisite for broad development of socialist competition. The question at issue is not that of large-scale substitution of time for piece work, but merely of eliminating piecework systems that have not justified themselves economically and of replacing them either by a real piecework system or, if this is desirable at the given enterprise, by a time-plus-bonus system. This question has to be solved at each particular enterprise on the basis of the specific conditions of operation there.

With the object of reinforcing cost accounting, plant managers should be given the right to employ various systems of bonuses both for workers and for engineering and technical personnel. The primary weakness in the organization of cost accounting at many enterprises rests specifically in that it is as yet weakly involved with material incentive to the personnel in rational and economical utilization of fixed and circulating capital.

The resolutions of the 20th Party Congress note the necessity of increasing the role of bonuses as an incentive to new technology and in its introduction, in raising labor productivity and reducing the cost of production. This pertains both to managerial and engineering-and-technical personnel, and to workers. They must all have a material interest in the proper functioning of the enterprise as a whole, in increasing output, reducing its cost, improving its quality, and so forth.

To reinforce cost accounting it is necessary to make wider employment of collective forms of bonuses. Unfortunately they are in very slight use among us. During 1955, the so-called enterprise fund, which is the main source of collective bonuses, came to only 0.5% of the total wage fund. In 1956 there was virtually no change: the figure was 0.8% in the coal industry, 0.6% in the tool and lathe industry, in the road building industry 1%, etc. At the First Government Ball Bearing Plant, contributions to this fund came to an average of 9 to 28 rubles per month during the past 9 years, and they grew smaller each year.

The enterprise fund may be employed with considerable freedom by the heads of enterprises for material rewards to personnel. But this requires a significant increase in the amount of deductions from profits into this fund and its use primarily to give bonuses to the personnel for their work during the entire year.

It would be desirable, by way of experiment, to give the managers of a number of enterprises the right of absolutely free disposition of the wage fund. Being guided by the existing wage scale and salary system, the director would, on the basis of the specific conditions of production and composition of the personnel, be able to use wages as a means for material reward to the best workers. The manager of the enterprise should have the right to use a specific portion of the saving accomplished by reducing the staff of engineers and technicians below the standard (or planned) number for bonuses to plant personnel. This would raise the interest of the collective of the enterprise in improving labor productivity, in reducing the staff and improving its work.

At present, the plant manager is still too restricted in his freedom to organize the work and wages. Thus, the Rules of the National Economic Council of an economic administrative district state that the national economic council is granted the right to establish, within the limits of the approved plan for labor, the number of administrative and managerial personnel for the enterprises, organizations and institutions subordinate to it, to shift particular categories of workers to progressive piece wages and, subject to agreement with the trade union council, to time-plus-bonus payment. Consequently, the enterprises themselves do not have the right to establish any particular wage system.

Under the new conditions of development of our national economy, it is necessary properly to coordinate centralization and decentralization in the field of organization of payment of labor, more widely to develop the initiative of workers in the enterprises, more boldly to experiment with new methods. It is necessary more completely to utilize the economic law of distribution in accordance with labor, and the principle of personal material incentive for a further upsurge of socialist production and the living standard of the people.

A. Kachalov:

A Major Means of Increasing the Effectiveness of Capital Investments

The November, 1958, Plenum of the CC of the CPSU has approved the draft theses of Comrade N. S. Khrushchev's report to the 21st Congress of the CPSU, "Target Figures for the Development of the National Economy of the USSR in 1959-1965." In the forthcoming seven-year period, the volume of government capital investments in the national economy will virtually equal the volume of capital investments during the entire existence of the Soviet power. Successful realization of these plans will be facilitated by the reorganization of the administration of industry and construction, the measures for further development of the collective farm system, and other economic and political measures taken by the Party and government.

According to the Central Statistical Administration of the USSR, the first half of 1958 saw, for example, the production of more coal than in all of 1949, more pig iron and rolled steel than in all of 1950, more electricity than in all of 1951. During the past three years, 2,500 new large industrial enterprises have been built and brought into operation in various branches of the national economy. In 1957, 51,000,000 square meters of housing was built. Moreover, collective farmers and the rural intelligentsia built 784,000 dwelling houses. In 1958, much new industrial capacity was brought into operation in the iron-and-steel, the ore mining, the coal, chemical, petroleum, gas and other branches of the national economy.

The Central Committee of the CPSU and the USSR Council of Ministers have, in recent years, taken a number of measures directed to further improvement of the construction industry. As the result of the introduction of these measures, considerable successes have been scored in reducing the cost of and accelerating the construction of homes, industrial and other structures.

The reorganization of the management of industry and construction facilitated the overfulfillment, in 1957, of the plan for the construction of housing and the projected volume of construction and erection in all fields in the country as a whole. However, the plan for launching new capacities was not met in a number of branches of industry. For example, the plan for starting new capacities in the manufacture of steel and coke, in the production of iron ore and coal, and in the production of electric power at thermal power plants, was not met. The plan for starting enterprises to manufacture building materials was not met. The starting of units so important to the national economy as rolling shops is still lagging significantly. The rates of launching of new capacities at cement plants and certain enterprises in the chemical industry are also unsatisfactory.

Prompt launching of operations at new, and the reconstruction of existing, plants is of immense significance to the national economy. In his speech at the meeting of builders of the V. I. Lenin hydroelectric plant on the Volga, Comrade N. S. Khrushchev spoke of the prime importance of reducing construction times: "Reduction in the time required to build power plants will make it possible to accelerate the solution of the primary economic objective — that of catching up with and surpassing the advanced capitalist countries in the production of goods per head of population. Here, too, the problem of gaining time is very acute." Our country has to gain 10 or 15 years of peaceful competition with the capitalist countries to solve our prime economic problem. This means that we have to produce as fast as possible, to build more and better. This also requires that each ruble of capital investment be converted to new production capacities as fast as possible. This is why the Party and government have now posed with such sharpness the problem of what is termed incomplete construction, wherein many enterprises are under construction, and they are launched a number of years subsequent to the planned date.

Our country has outlined a grandiose program of economic construction in the years just ahead. The extraordinary 21st Party Congress before us will examine and approve the target figures for the development of the national economy of the USSR for 1959-1965. Fulfillment of the Seven-Year Plan for development of the national economy will further strengthen the might of our country, and lead to an abundance of industrial goods and foodstuffs for the population, and raw material for plants and factories. Production will rise primarily due to reconstruction of old and the construction of new productive capacities, and also by better utilization of available capacities at enterprises in operation. Capital investments in our country's national economy are increasing with each 5-Year Plan, with every year. In 1959-1965 they will rise 80% over the preceding 7-year period.

High rates of increase in capital investment are possible with us because of the significant annual increase in national income. The rise in national income is substantially dependent upon reduction of the terms of construction of various projects and acceleration of the starting-up of operations. Deceleration of rates of construction diminishes the efficiency of capital investments and increases the volume of incompleted construction.

Comrade N. S. Khrushchev's theses at the 21st Congress of our Party note that the projected grandiose program of capital construction must be carried out with maximum saving of government funds, one of the sources being reduction of unfinished construction.

The volume of unfinished construction is rising from year to year. At the beginning of 1958 it attained 176,100,000,000 rubles, which is more than 85% of the figure of capital investment for that year.* The volume of unfinished construction in the coal industry, ferrous metallurgy, railway transport, enterprises in the machinery and foodstuffs industry and other branches of the national economy is particularly large.

In this connection it should be noted that, during the last four years, the volume of uncompleted construction has increased by approximately 28%, and capital investments

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* The ratio of total volume of incompleted construction to annual capital investment, investigated here and below, is somewhat arbitrary because of the difference in the bases on which they are calculated. In point of fact it would appear to be even somewhat greater than the figures presented in this article.

(without appropriations for equipment not requiring assembly and not included in the estimates of construction projects) by 43%, i.e., the rates of increase in incompleted construction were somewhat lower than the rates of increase in capital investment. However, the volume of incompleted construction is, as indicated above, still very large, and much work is required to bring it down to sensible proportions, a matter that is of particular importance under the conditions of the vast capital construction projected for 1959-1965.

One of the primary causes of failure to fulfill the plan for launching the operation of industrial enterprises is the mistaken practice, condemned by the Party and government, of dissipating capital investments among a large number of projects. Many projects under way and others to be started are annually provided financial resources and materials inadequate to assure rates of construction that would guarantee their completion in the periods established by the standards for duration of construction or the plan for organization of the work.

The striving of organizations and enterprises to start new construction under any and all circumstances results in dissipation of funds among numerous projects, an increase in the periods required for construction to 3, 4 or more times as long as scheduled, and nonfulfillment of the plan for launching new capacities in the most important branches of the national economy. Failure to adhere to the schedule for starting up new capacities causes the country an annual loss of a considerable quantity of production. Slowing of the rates of production also occurs as a result of unsatisfactory functioning of many construction organizations, shortcomings in supply of materials and equipment, and particularly incomplete provision of equipment, apparatus and special materials to capacities scheduled to go into operation.

Dissipation of funds among numerous projects, and the major shortcomings still existing at a number of construction projects in organization of supply of materials and equipment and in construction and assembly are the prime reasons for the excessive increase in the volume of incompleted construction.

The volume of unfinished construction was particularly large in the Georgian and Azerbaidzhan republics at the beginning of 1958. When compared with the capital investments envisaged for 1958, it came to 143.2% and 115.4% respectively. In the other union republics, including the RSFSR, the volume of incompleted construction came to 80-100% of the established volume of capital investments.

In the Georgian Republic, the volume of incompleted construction exceeds by 100% to 130%, the volume of capital investments for the majority of projects in the manufacture of machinery, the coal industry, electric power plants and agriculture. Unfinished construction in the Azerbaidzhan Republic includes up to 35% of the volume of drilling and geological prospecting, one-half of which pertains to projects on which construction has ceased, and which have been mothballed.

Analysis of the composition of unfinished construction for the country at large shows that 69% represents projects to engage in production, 24% represents housing, public utility and service construction, and about 7% pertains to other projects not for purposes of production. About 9% of the unfinished construction in the country represents projects, work on which has temporarily been brought to a halt or which have been finally abandoned. This testifies to the serious shortcomings in the planning of capital investments, expressed in the fact that substantial funds are directed to the construction of projects not of primary importance to the national economy.

The unfinished projects include some started 10 to 18 years ago, but which cannot be turned over for operation for reasons of inadequate equipment. Thus, the Stalinsk-Abakan railroad, started in 1940, was, as of January 1, 1958, in a condition in which only 78% of the work represented by its estimated cost had been performed. Operation of this line on a temporary basis is proceeding, but the 1958 plan again failed to provide for placing it in regular service.

As a result of the dissipation of appropriated funds among a number of oil refineries, the former USSR Oil Ministry dragged out the period of construction. Thus, the construction of the Fergana refinery was begun in 1949. In 9 years, only 27% of the estimated cost of the plant has been invested. A similar picture may be observed at the construction of other oil refineries. The standards for term of construction confirmed by the State Committee on Construction, under the USSR Council of Ministers, and by the State Planning Commission, provide for the first units of such refineries to be built in 5.5 years. In reality, the first units are brought into operation in not less than 7 to 9 years. In connection with the fact that oil refineries remain in the stage of construction for many years, their original plans become obsolete, particularly as far as production engineering is concerned. Therefore the former Ministry of the Petroleum Industry of the USSR found itself compelled to re-examine the plans for certain plants under construction for the purpose of equipping them with more modern and powerful refining equipment. The dissipation of funds among numerous refineries and a multiplicity of units in each gave rise to weaknesses in the organization of construction and labor, and inhibited the introduction of mass-production methods in construction.

The dissipation of capital investments among a number of projects results in dissipation of the resources of the construction organizations in materials, equipment and labor. For example, in 1957, Construction Management No. 1 of Trust No. 23 pursued work simultaneously on 111 structures while engaged in building one oil refinery. 80 of these were its own undertakings, 14 were units of the plant and 17 were for other customers, the result being that an average of 5 workers was engaged on each job. This type of dispersal of funds and resources further increased the scope of incomplete construction at these structures. In 1951-1957, appropriations for the construction of five oil refineries were made to a total of little more than half their total estimated cost, and yet even these funds were not used to the full.

The mistaken practice that had become rooted in the practice of the former USSR Petroleum Industry Ministry continues. Despite the existence of a vast quantity of incomplete construction at a number of plants under construction, where capacity in operation is only an insignificant fraction of projected output rate, appropriations were made in 1958 for the construction of three more oil refineries, and again without adequate guarantee of the funds needed to build them in the periods set forth in the standards for time of construction. As a result, the volume of incomplete construction at these plants is rising from year to year, and on January 1, 1958, it comprised about 150% of the volume of work performed in 1957.

In the coal industry the volume of incompleted work at mines and open cuts has also attained a substantial level. The dispersal of capital construction among a multiplicity of mines and cuts, and the continuation dissipation of funds has led to a situation in which a large number of these structures remain under construction for 10-12 years. Many mines and open cuts should, in accordance with the national economic plan, already be in operation and yielding coal. Yet, some of them are still in the stage of construction, with the result that the country fails, each year, to obtain millions of tons of coal that it might otherwise receive.

Cases in which units are scheduled for construction without the filing of plans and estimates, are not rare. For example, the enterprises and construction organizations of the Moscow City National Economic Council formally listed, in 1958, start of construction of 184 new houses, of which 78 were not covered by the approved documents for filed plans and estimates. According to the office of the USSR Industrial Bank for the Kazakh Republic, the national economic councils, ministries and bureaus of that republic listed in the plan of capital construction for 1958, 529 structures, to a total value of 522,000,000 rubles, not covered by planning documents.

As noted above, the dragging out of scheduled periods of construction is due, to a considerable degree, to failure to coordinate plans for capital construction with plans for supply of materials and equipment. The shortcomings in the very system of supply of materials and equipment further complicate the difficulties in prompt provision of materials and equipment to construction projects.

The Councils of Ministers of the Union republics, the national economic councils and the state planning commissions must give serious attention to the development of smoothly working services to provide sites with the required equipment, particularly electrical equipment. We know that in order for industrial enterprises to go into operation in the required time, prompt and complete provision of equipment is essential. Thus, in 1957, 8 production units in the iron and steel industry, whose construction was complete, were not started because of the fact that the required equipment was lacking at the time. At the same time, some projects have excess supplies of equipment. A survey of 4200 construction projects and enterprises made by the USSR Industrial Bank in January, 1958, showed that 12.5% of the total uninstalled equipment represented equipment that is excessive and not needed at the given projects.

Late delivery of materials also drags out construction time.

The present method of calculating standards for consumption of materials per million rubles of construction and erection is suited to the planning of material and technical resources for the branch as a whole, but is often not suited to determination of the needs of specific units. The standards for construction time define the approximate distribution of capital investments over the years of construction. It would be desirable that these quotas also indicate overall indices of the needs of the major materials, construction machinery and mechanisms having to be assigned so as to complete the project in time.

The increase in unfinished construction is also in part due to the existing failings in the procedure for planning the starting of operations of basic installations. The dissipation of funds among numerous units clearly forecast the fact that construction would not be completed on time. As a rule, this was reflected in the fact that plans for bringing basic plant into operation was usually understated relative to the annual plans for capital investment.

According to data as of January 1, 1958, unfinished construction included a large number of units actually in operation. However, the expenditures upon their construction, which attained many billions of rubles, were not included in the fixed capital, and therefore these units were not officially listed as operating because of supposedly being unfinished.

The Railway Ministry, the Ministry of Power Plants and certain enterprises in the iron and steel industry tend to drag out the period of time required to start the operations of undertakings that are practically complete. Sometimes no funds are granted for years at a time to eliminate minor incompleted jobs costing no more than 1.5%-2% of the estimated cost of the structure as a whole, the result being that the projects are listed as incomplete and are operated on a temporary basis.

The lack of standard dumps of construction materials is another significant shortcoming, often affecting prompt launching of operations.

According to summary data, the second half of the year has, for the past six or seven years, seen the beginning of operations or use of 67%-72% of the total fixed capital placed in operation each year. Similar unevenness has also been permitted to exist in planning the placing of housing space into use. Particular lack of uniformity has been noticed in the past two years in placing new capacities in operation in exceedingly important branches of the national economy: the iron ore, coal, textile, wall materials, and cement industries. For example, of the fixed capital placed in use in the entire year of 1956, only 5% went into operation during the first quarter, 10.2% during the second, 11.5% during the third, and 73.3% during the fourth. Approximately one-half the housing space made ready for occupancy in the fourth quarter is usually readied in December.

The establishment of standard dumps of construction materials requires technologically and economically justified standards for the quantities of supplies they should store. Scientific research institutions of the USSR Academy of Construction and Architecture, the USSR Council of Ministers' Committee on Construction, the State Planning Commission of the USSR, and the leading planning organizations should proceed to develop such standards for each year of the construction of typical units built in the major fields of the economy, and should indicate the equipment and machinery (major) that they require.

Today, the first quarter of the year, is the period during which supply dumps are usually built up at many projects. This is chiefly because a practice has become rooted in the planning of capital construction in which not more than 17-18% of the annual funds are allocated for that quarter. This compels lay-offs of workers and reduction in management and technical staffs (as compared with the 4th quarter of the preceding year), while they have to be taken on again during the second quarter, when the volume of work picks up considerably.

In order to maintain key personnel around with whom to expand operations in the second, third and fourth quarters, some construction organizations are compelled to employ skilled workers out of their trades or to furlough them without pay. All this has a negative effect upon the organization of operations at construction sites, reduces rates of operation, makes for turnover in personnel and thus extends the period required for construction.

During the first quarter, capacities are not in full use at many projects, and overhead rises, making the job more costly. Not infrequently the lack of a long-range plan for capital construction agreed upon between customer and subordinate construction and erection organization leads to sharp changes in the construction plans for particular units by year, to an uneven load upon the subordinate construction organizations, and also to dragging out the time required for construction and rendering it more expensive. For example, capital investments in the construction of the Stalinsk-Abakan railroad were planned as follows: 117,000,000 rubles in 1954, 40,500,000 in 1955, 61,800,000 in 1956 and 126,600,000 in 1957. Such shortcomings in planning result in turnover in the labor force and major supplementary expenses.

Frequently, the planning of capital investments is done without consideration of the available capacities of construction organizations and of the growth therein. Each year, for example, the plans set for subway construction are understated for virtually every project, whereupon the planning organizations have to raise them in the middle of the year due to fulfillment of the prior plans "ahead of time."

According to the data of a check-up made by the USSR Industrial Bank in 1955 into a large number of construction organizations, utilization of the capacities of the major production enterprises came to about 60%. For example, over a long term of years, the capacities of the brickworks controlled by the construction organizations on the territory of the Bashkir ASSR were utilized to a total of 60% or 70% of capacity, at a time when construction projects in this republic experienced a lack of brick and imported it from adjacent oblasts. In Orenburg Oblast, brickyard capacity was utilized to a total of 65%, and that of plants making products of reinforced concrete by 55%. Despite the poor utilization of available capacities of manufacturing enterprises, construction organizations in these same economic districts are engaged in building new, similar enterprises, justifying this by the fact that there is allegedly a shortage of capacity available.

In many cases, construction organizations are building subsidiary enterprises designed to be used for brief periods of time, at the end of which they are to be liquidated. According to the data of the USSR Government Committee on Construction, approximately 4 billion rubles was spent on founding quarries alone during the 5th Five-Year Plan, although one-third of these quarries were founded to satisfy the temporary needs of construction, and then liquidated.

In connection with the formation of the national economic councils and the making over to them of the general building and a number of special construction organizations, it is necessary, in planning, to give consideration to the desirability of creating substantial regularly-functioning enterprises in the construction industry to serve all the projects in the district.

Another major shortcoming in the planning of construction is an underestimation of the need for preferred development of the enterprises producing for the construction organizations, and of building up their capacities before work on the major units of the enterprise under construction gets under way. Thus, the cost of construction of one major industrial unit begun in 1958 comes to about 1,800,000,000 rubles, while the first unit to go into operation in 1962 comes to 800,000,000 rubles. The district in question has no major construction organizations, and therefore it is planned to establish construction capacities at the site to a total cost of 100,000,000 rubles. The question arises as to how the construction of this large enterprise is to be assured, if only 100,000,000 rubles are planned to be spent during the first two years (1958-1959), including approximately 50,000,000 rubles for the founding of the producing construction industries. Would it not be more correct to complete erection of the housing and the construction industry for this project during the first year or 18 months, so that units of the basic enterprise can then begin to be built at an accelerated pace? The practice we have described, which is particularly typical of projects in the iron ore and petroleum industry, results in dragging out the length of time before enterprises go into operation and in increasing the volume of incompleted construction.

There can be no doubt that improvement in the organization of construction work, and cessation of dissipation of funds among a multiplicity of projects is capable of speeding the placing in operation of units that have for long years been in the stage of unfinished construction. Unification of small contracting organizations into larger ones is essential in order to increase the capacities of construction organizations.

The concept of "capacity of a construction organization" and that of "supply dumps in construction" must once and for all be defined by the USSR Government Committee on Construction of the Council of Ministers, and the USSR Academy of Construction and Architecture. A scientific generalization of the experience acquired in the building of enterprises in various branches of the economy must be taken as the basis for determining just what is comprised in the concept of "capacity" for general and specialty building organizations. It will also be necessary to develop a methodology for determining the supplemental annual capital investments required for the upbuilding of the building materials and construction industries in accordance with the volume of construction and erection planned in the given economic district. A scientifically founded method of determining the capital investments necessary for the development of the building materials industry will assist in resolving the problem of priority development of the capacities of construction organizations.

One of the most flagrant violations of the directives of party and government in the field of capital construction is the attempt on the part of some chiefs of local organs to utilize larger funds for the satisfaction of local needs than the government can spare at the present time, at the expense of the development of industry of significance to the national economy. Certain national economic councils have arbitrarily reduced the volume of capital investment in the development of the most important branches of industry as established by the plan for 1958, and have utilized substantial funds thus obtained to build bridges within various cities, theaters, etc. Instances of this type have occurred in the Karaganda, Gorky, Kuibyshev, Dnepropetrovsk, Lipetsk Altai, Krasnoyarsk and Ryazan economic administrative districts. Some chiefs of enterprises and national economic councils have illegally, and at loss to the prime production and construction under the state plan, expended circulating capital and materials in short supply for housing construction, the work itself being done by these personnel of these enterprises.

All these shortcomings in the planning and utilization of capital investments have increased the length of time required for construction and raised its cost. An increase in the time required for construction slows the process of expanded reproduction. Therefore, reduction, by all possible methods, of the volume of unfinished construction, and elimination of the causes giving rise to the unjustified increase therein, are presently important problems before the national economic councils, and the Party, Soviet and trade union bodies of the constituent republic, territories and regions.

The Party and government have taken special steps to assure fulfillment of the plans set for getting operations under way in enterprises for which this is scheduled, and to reduce terms of construction. The Central Committee of the Communist parties and the Councils of Ministers of the constituent republics, the territorial and regional committees of the Party, the national economic councils, the ministries and the planning organs have been required to carry out a number of specific measures to put an end to the harmful practice of dispersal of capital investments among numerous projects, and to achieve a reduction in the terms required for construction. Only after projects scheduled to go into operation and those in which work is well under way have been granted the required resources and funds, should capital be appropriated for investment in new projects.

The Councils of Ministers of the constituent republics, the ministries and the departments have been assigned to check the lists of projects estimated to cost less than 50,000,000 rubles, with the object of eliminating those of secondary importance and of increasing progress targets for those where the launching of operations can be accelerated. Measures must be taken to finish jobs that have been left undone and to accelerate the initiation of regular operation of buildings and structures showing a high percentage of readiness for operation, equipment-wise, including projects that have been in "temporary operation" for a long time, but listed as unfinished construction.

The Councils of Ministers of the constituent republics, the national economic councils, the ministries, bureaus, managers of enterprises and construction projects have been required to re-examine their plans and total estimates for unfinished projects and to eliminate those whose construction is not an economic necessity. The review of plans and of cost estimates for construction projects undertaken in the constituent republics demonstrates that a substantial reduction in expenditures for construction of enterprises is possible. Thus, according to data of the USSR Industrial Bank, the result of a review of the filed plans and estimates of projects whose unfinished work as of January 1, 1958 represented 27.5% of the total for all projects in 1958 was to eliminate from the construction plans 1,039 items to a total value of 1,400,000,000 rubles, chiefly not designed to serve in production, or of secondary significance and therefore no longer needed. 468 various items have been eliminated from construction plans in 1958 by the Moscow region and city, Orenburg, Krasnodar, and Ulyanovsk national economic councils and by the Orenburg and Novosibirsk Oblast executive committees. The Councils of Ministers of the Belorussian, Azerbaidzhan, Georgian, Lithuanian, Moldavian, Kirgiz, and Estonian union republics have eliminated 213 items of secondary importance and a total of 110,000,000 rubles of capital investment from the estimates of enterprises under construction. The funds released have been channelled to the construction of the most important items that are to go into operation. This work is continuing and doubtless will reveal many more items the construction of which can be dispensed with, thereby saving some billions of rubles for the national economy. It is calculated that over 15,000,000,000 rubles worth of fixed capital can be brought into operation in 1958 over the plan, plus about 8,000,000,000 rubles worth requiring insignificant amounts of work for completion that have long been in operation but listed as unfinished construction.

Careful analysis of lists of items and total estimates for projects should continue in the future. The Industrial Bank, Agricultural Bank and Central Bank for Civil Improvement, which provide the financing for capital construction, should be of major assistance in this respect. In order further to reinforce the role of monitoring by the banks over capital construction it would in our opinion be desirable that, in addition to the measures already taken, there be a re-examination of the question of establishment of a single, independent, bank for the financing of capital construction — a Construction Bank of the USSR.

The scope of unfinished work on buildings and structures requiring long terms to erect may be reduced by an amendment to the principle by which their readiness, both in terms of equipment and relative to their significance for the national economy, is determined. The majority of major enterprises have a number of separate departments and production units capable of yielding finished output for other enterprises (although their products may at a later time serve as semi-finished goods for shops of the enterprise being built after it has fully gone into operation). The planning and construction of large enterprises should be run on the assumption of successive starting of manufacturing units and departments, and possible interim subcontracting for similar enterprises, already in operation. With the purpose of accelerated output of products for the needs of our country's economy it is also necessary in a number of cases to build medium-sized enterprises capable of being put up in a comparatively brief period of time.

In the planning of capital construction it is also impossible not to take into consideration that the time factor is frequently the cause of greater costs than direct material expenditures, inasmuch as no financial outlays are capable of making good lost time. A primary task before the many millions of construction workers in the coming seven-year period is reduction in terms of construction, reduction in the cost thereof, and increase in labor productivity by application of more advanced and economical solutions of problems in planning and construction, modern materials, industrial methods of construction, and increase in the machinery and power available to construction, and in the skills of the workers.

Elimination of the present shortcomings in the field of major construction, and, in particular, reduction of the volume of unfinished work and more speedy launching of operations at finished structures, with minimum outlays of money and labor, will facilitate successful completion of the plan for development of the national economy of the USSR in 1959-1965.

*I. Slepov:**

Current Problems in the Industrialization of Construction

In the USSR, basic construction has a major role to play in creating the basis for communism in material things and technology and in meeting the foremost economic objective of the USSR — that of overtaking and surpassing the most advanced capitalist countries in output of production per head of population. This is why matters pertaining to construction are, with us, of not only economic, but political importance.

No country in the world can match the Soviet Union in volume of capital investment, and in the scale and rate of construction, into which the USSR has placed colossal resources of labor and material wealth. It suffices to note that reduction in cost of construction during the forthcoming seven-year plan by merely one per cent comes to an enormous sum. This makes clear why it is so important to build faster, better and cheaper.

The attainment of higher efficiency in capital investments, and the utilization of the vast resources which the country is channelling into construction constitute an undertaking of major significance to the national economy. Solution of this problem is intimately involved with the industrialization of construction, which will aid in advancing technological progress and a fundamental improvement in the construction business as a whole. This in turn requires greater attention to problems of the organization and economics of the industrialization of construction. However, there is no unity of opinion in the special and the general literature in defining the very concept "industrialization of construction." Yet scientific rigor in the formulation of such a concept is of high significance to the planning of capital investments in the national economy, the determination of proper proportions between the volume of capital construction and the development of the capacities of the construction industry, for organization of a more rational structure and management of the building industry, and also for the planning of new types of construction equipment, to assure all-round mechanization and automation in the construction industry, etc. Here, for example, are the differences in definitions by various specialists writing in the field. In G. F. Kuznetsov's book, Designs of Dwelling Houses in Postwar Construction (1947), we read: "Two lines of development may be noted in the progress of modern methods of construction. The first is the mechanization of construction, i.e., the use of modern machinery and power tools, which speed construction and replace some portion of manual labor on the site. The second is industrialization of construction, which means that the production of building components — casements, doors, subflooring, steps, staircases, etc. — is shifted to manufacturing plants, and these plants produce standardized products on a mass scale" (p. 194).

In his book, The Organization and Planning of Construction, B. S. Ukhov writes (1954): "...The industrialization of construction comprises: 1) concentration of the manufacture of building materials, semifinished products, parts, assemblies and other products in special plants and 2) mechanization of the work of erection and assembly" (p. 117).

In his work, Major Problems in Construction Economics, (1957), B. Ya. Ionas asserts: "The concept of industrialization cannot be reduced merely to factory manufacture of parts and fabrications, although this is one of the basic elements in the industrialization of construction. In point of fact, the process of industrialization of construction is considerably more extensive. It consists of an economically justified shift of the processes of construction from the building site to factories, and the transformation of the building site to one for assembly and erection, with utilization of all-round mechanization and high-speed, sequence methods of work, based on the rules of technology that govern in the field of construction" (p. 41).

The September 5, 1958, issue of Stroitel'naya gazeta criticizes the Brief Economic Dictionary for incorrect definition of the concept of "industrialization of construction." "The industrialization of construction is characterized not by the manufacture of building parts, fabrications and assemblies by industrial methods, but by their employment in industry. The manufacture of structural parts, fabrications and assemblies is outside the purview of construction." And the newspaper, Za peredovuiu nauku, published by the USSR Academy of Construction and Architecture, in an article specially devoted to clarifying the nature of the industrialization of construction (September 9, 1958), writes: "Assemblability in construction...is a powerful means of industrializing construction. However, this is a means and not an end!"

Wherein, in our opinion, is the lack of precision, and consequently the incorrectness of these formulations? In his definition of the industrialization of construction, G. F. Kuznetsov separates it from the mechanization of processes of construction, and even counterposes the mechanization of construction to the industrialization thereof.

The definition of the industrialization of construction given by B. S. Ukhov does not exhaust the meaning of this concept. It lacks reference to the intimate relation between the industrialization of construction and the introduction of modern machine technology into the conduct of construction, the utilization of standard designs, the standardization and coordination of parts, without which it is impossible to build by the methods of industry.

B. Ya. Ionas regards the industrialization of construction as a process of developing a new method of production founded on advanced modern technology and consisting only of transferring the processes of production from one locale to another. The essence of the matter lies not in this transfer, but in the creation of a qualitatively new type of production, not only in housing but in all types of industrial and civil construction.

It should be stated that construction must and certainly can be conducted by industrial methods without shifting the processes of construction to the factory (the building of a dam by hydraulic methods or the erection of a dike, the digging of a pit or the laying of concrete in the body of a dam, etc.) All these jobs can be performed (as they are, in actuality, at up-to-the-minute jobs), right on the constructio site, with the aid of a complex of building machinery.

A particularly gross error is made by Stroitel'naya gazeta in publicizing the concept that the essence of industrialization lies in the application of pre-assembled parts in construction. This not only separates assembleability from the organization of the manufacture of parts and fabrications itself, but even counterposes one to the other.

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*Kiev.

The utilization of assembled parts relates more to consumption than production, and the industrialization of construction means the developing of qualitatively new products based on machinery. Actually, one can also use assembled parts that have been made by hand. We know, for example, that assembled parts were used in the construction of St. Isaac's Cathedral and other ancient buildings.

We regard the following definition of the concept "industrialization of construction" to be more accurate and complete. The industrialization of construction is the process of introducing modern machine technology into the business of construction, i.e., the creation of a large-scale construction industry and the manufacture thereby of pre-assembled structural parts, fabrications and assemblies, followed by mechanized assembly thereof at the construction site by the development and utilization of a complex of construction machinery to provide complex mechanization of all the work of construction and assembly, to be performed strictly in accordance with the technology and uninterruptedly, regardless of the season of the year.

On this basis, the result of introduction of industrialization into construction should be defined as the creation of a building industry in the form of a unified complex consisting of: a) large-scale enterprises, equipped with the latest in machinery, for the manufacture of building materials, parts, fabrications and entire assemblies, leaving the factory in completely finished condition; and b) a system of machines and of organizations capable of realizing the all-round mechanization of all operations in construction and assembly.

Realization of the industrialization of construction in the sense presented above would fundamentally change the nature of the processes in the building industry and the relationship among them, and would assure the solution of problems such as reducing the outlay of labor per unit of output, increasing labor productivity, cutting costs, reducing the time required for, and improving the quality of construction.

The basic principles of industrial machine production in the industrialization of construction lie in the fact that a number of jobs (earth-moving, concrete laying, etc.) will be performed by machines or systems thereof right at the site; the manufacture of all or virtually all building parts, assemblies and fabrications on a mass scale, with utilization of assembly-line methods and automation under factory conditions; the erection of buildings and structures on the construction site will be done by machine on the basis of the assembly of prefabricated parts, elements and entire assemblies. The erection of assembled units may be performed either by specialized assembly organizations or by plants engaged in the manufacture of these parts and fabrications.

Successful, economically efficient realization of the industrialization of construction requires, in addition to a highly-advanced heavy industry (particularly the manufacture of machinery), the presence of carefully elaborated standard plans and a composite catalog of uniform elements of buildings and structures, as well as improvement of standardization in large-scale construction; the development of machines or systems of machines and equipment capable of furthering the all-round mechanization of construction work, starting with the production of assembled parts and structures, the loading and transportation thereof, and ending with assembly work to erect (put together) buildings and structures; the creation of permanent nuclei of highly-skilled construction workers and engineering and technical personnel; the combining of construction organizations and their assignment to specific geographic areas; and the bringing of management closer to the point of production.

The USSR has, particularly in the years since the war, done a great deal to industrialize construction. However, it must be recognized that, to take a single problem, a great deal of construction work is done by hand, and that as many as 50% of all workers are engaged therein in a number of building and erection trusts. Thus, the loading and unloading of many construction materials is done by hand, cement very often being unloaded without mechanical aids. The finishing jobs are also done by hand in the majority of dwelling houses.

In order consistently to pursue the industrialization of construction and thus to assure the creation of a large-scale construction industry equipped with modern technology, it is necessary in the first place to eliminate the shortcomings still in existence. One of the serious shortcomings in this respect is the construction of new plants for the manufacture of building materials and parts on the basis of outdated plans. Another serious error is the fact that until quite recently brickyards were given preference over cement plants in allocations of capital investments in the construction industry. As a result, considerably more brick is produced in the USSR per head of population than in the United States. But in production of cement per head of population, the USSR currently lags behind not only the USA but certain other capitalist countries as well.

The ratio of production of cement to brick is a reflection, in a way, of the ratio between hand and mechanized labor in the building industry. From this it is clear that technical progress and continuous expansion of output in construction require the output of cement to run ahead of that of all other types of building materials.

Let us remember that clay brick is the most expensive of building materials. Moreover, it is used in our construction industry with impermissible extravagance. The standards for estimates now in effect envisage the use of 405 bricks per cubic meter of wall, or 6% more than is actually required. Losses of brick entirely within the limits of the standards noted are annually over half a billion pieces. (The fact of the matter is that these standards were set nearly 100 years ago by a well-known builder of his day, Count Rochfort, and have remained in force to this day virtually without change, although transport is different and hoists are entirely other than those in use in the middle of the 19th century). However, losses of brick today are very great. To this day it is often transported in bulk, and breakage not uncommonly attains 20%. For this and other reasons, the actual brick consumption at many sites significantly exceeds the excessive standards in force.

Today the use of brick as a material of construction is in contradiction to mechanized production and modern technology and to the new and progressive materials: large blocks and panels, which made for industrial methods of production and consequently for a high level of economy. Nonetheless, the manufacture of brick is, to this day, given more attention than the production of prefabricated parts, particularly vibration-rolled reinforced concrete panels. Many personnel of the State Planning Commission and of a number of the national economic councils in the Ukrainian Republic continue to suffer from a kind of "brick sickness." Thus, the Ukraine is continuing to build brickyards, although now they call them plants for the manufacture of silicate products. But the fact of the matter is that these are the same old brickyards, and all they make is silicate brick. Plants for the manufacture of rolled reinforced concrete are given virtually no attention, although it is known that that is the most profitable kind of plant to build.

There are also many shortcomings in the planning of the production of new construction machinery. The cost of construction machinery and equipment is very high, and, due to the fact that they are not built in coordinated sets, their efficiency is low. Thus, for example, the output of tower cranes is high, but that of mechanisms required for work in conjunction with these cranes is low or nonexistent. As a result, the majority of machines for construction are employed not over 75% of the time, and to an even smaller percentage of their power.

Another shortcoming is the fact that industrialization of the various processes of construction is not pursued in coordinated fashion. For example, in 1955, Glavkievstroy built a number of multi-story buildings of large block construction on the Kreshchatik in Kiev. However, in view of the dragging out of finishing work, these buildings were not yet in use as of November, 1958. All the advantages of industrial methods of wall erection were reduced to naught by the use of handicraft and backward methods of finishing. This example is clear testimony to the fact that it is impossible to disregard certain processes while industrializing others, and that the need is for all-round industrialization to provide more efficient conduct of all types of construction work.

In defining the concept of "industrialization of construction," arguments have arisen repeatedly over whether the building materials industry is a component part of the construction industry or an independent branch of the national economy. Are they right who assert that the rise in industrialization of construction will be accompanied by the probability of further organizational separation of the production of building materials and fabrications from the performance of the job of construction and assembly?

The error of the partisans of separation of the construction industry into two independent branches of industry: assembly and construction on the one hand, and the production of building materials on the other — lies in the fact that they have failed to see that one result of the industrialization of construction in our country has been the foundation and further development of an independent branch of the economy — the construction industry. The construction industry is a branch of material production creating its output in the form of buildings and structures, starting with the production of parts, assemblies and fabrications and finishing with the jobs of building and erection.

The manufacture of building materials, parts and fabrications on the one hand, and the performance of jobs of construction and erection on the site, on the other, are stages in a single process of producing buildings and structures. In construction operations with a high degree of internal specialization, the unity of this process will be felt ever more strongly.

The establishment of territorially-organized construction enterprises, with a high degree of internal specialization, will make for improvement in the level of technology and efficiency of the construction process and for greater economic effectiveness. This is confirmed by the experience of a number of large construction and assembly organizations, such as Magnitostroy and Cherepovetsmetallurgstroy. These establishments are typical integrated construction organizations in which, in addition to erection and building, there is manufacture of parts, fabrications and assemblies. The level of specialization here is at the highest level and the economic results are the best. The positive experiences of such enterprises is convincing proof that builders have to abandon outdated views to the effect that their job consists solely of assembling finished products. If they limit their work only to erection, builders become nothing more than assemblymen.

It is our opinion, specifically, that the Kiev and Kherson national economic councils have been wrong in dividing the administration of the construction industry into two bureaus: one in charge of construction and the other directing the manufacture of building materials. Aside from the fact that such a breakdown enlarges the administrative apparatus, it also fails to give consideration to the qualitative changes that have occurred in the construction field, destroys the unity of production, and introduces elements of disorganization.

Practical conclusions have to be drawn from all the foregoing. It is essential that the seven-year, and subsequent plans, for the development of the economy of the USSR, foresee the volume and rate of industrialization of construction, and the development of the large-scale construction industry as an independent branch. These plans require precise determination and justification of the plants to be erected in the construction industry, and of the construction machinery and equipment to be produced.

The fact that in our country construction has been converted into an independent branch of production has not yet found reflection in official documentation, in the literature of economics, and in statistical handbooks and texts. For example, the output of the building industry is not listed as part of the country's industrial output. However, there are a number of western countries, including England and France, where construction is already listed as industrial production. It appears to us that it is high time that the USSR State Planning Commission and the Central Statistical Administration of the USSR, along with the State Committee on Construction under the USSR cabinet develop standards and a system of planning and accounting for the work of production in construction, as an independent branch of industry. In this connection, the development of the construction industry has to be outlined, with planning of increases in capacity capable of producing millions of cubic meters of finished industrial, cultural and public service buildings, dwelling houses, etc.

The industrialization of construction gives rise to a qualitatively new type of material construction — machine production of structures. It is therefore necessary to abandon the present classification, in the building industry, into construction and the production of the requisites for construction. The latter constitutes an inseparable component of the production of structures and can neither exist nor be considered in isolation therefrom.

Successful reorganization of construction on the basis of industrialization thereof is substantially dependent upon the training of personnel. Unfortunately, very little attention is given, in improving the professional skills of engineers and technicians, and particularly those of designers in civil engineering, to the study of problems of the economics of the industrialization of construction and of the problems stemming therefrom. There are no courses whatever on the industrialization of construction in colleges and technical high schools for the construction trades, if we leave out the fact that this theme is "touched on" in all courses and lectures. It is time to develop and include in the curriculum of the colleges and technical high schools for the sconstruction industry, a course of lectures on the industrialization of construction and the economics thereof.

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V. Fridenberg:

Further Processes of Integration of Industries

The theses of Comrade N. S. Khrushchev's report to the 21st Congress of the CPSU assign an important role to the further perfection of progressive forms of organization, specialization and integration of industrial production.

The concept advanced in Comrade N. S. Khrushchev's report to the 7th Session of the USSR Supreme Soviet in 1957 on rapid and purposeful combination of similar enterprises in industry will be further pursued in the forthcoming seven-year period. During this period, realization to the fullest degree of all possibilities for the combination of various types of output will be a pressing necessity, due to the significant qualitative changes in the structure of many branches of industry. Richer ores are coming into use in nonferrous and ferrous metallurgy, and this will require advances in the complex processing of all the useful components. The development of the chemical industry, and in the first place the synthetic polymers and mineral fertilizer industry, will proceed with consideration of complex processing of by-product gases obtained in petroleum refining, natural gases and other types of raw materials, and this will require the organization of large-scale combined enterprises. The basic change in technological and economic policy in the field of the processing and utilization of wood makes for concentrated and integrated processing thereof in large enterprises.

The need to carry out qualitative structural changes in the economics of industry arises from the fact that vast quantities of natural resources are going to have to be processed. Thus, the production of 65-70,000,000 tons of pig iron requires 150-160,000,000 tons of milled iron ore, which means the mining of 230-245,000,000 tons of raw ore. The production of 9.25-10 million tons of sugar requires the growing of 70-78,000,000 tons of sugar beets. The coking of 150-156,000,000 tons of coking coals will yield not only 125,000,000 tons of coke but a substantial amount of valuable chemical raw materials. A substantial quantity of valuable natural gases will be subjected to chemical processing. Petroleum refinery gases alone will yield 2,500,000 tons of liquid hydrocarbons including various components required for the production of rubber, plastics, staple fibers, etc.

In this connection it must be emphasized that the program of further development of the productive forces of the Soviet Union proposed by the Communist Party for the coming 15 years envisages that an enormous quantity of mineral raw materials and fuels be brought into industrial processing. The total volume of natural resources subject to industrial processing (including agricultural raw materials) will come to billions of tons per year.

The involvement in industrial processing of a substantial amount of the country's natural resources, as set forth in the Seven-Year Plan, requires, in our opinion, the most modern organization of the matter possible. In the first place, it is necessary to assure all-round, complex utilization of raw materials not only by making maximum use of the primary substance, but by complete extraction of all the useful components in various types of raw materials. Secondly, it is necessary to establish a single, continuous production process by eliminating various intermediate unproductive stages in the processing of raw materials and intermediates; thirdly, it is necessary to achieve technological unity between the various stages of the process of treating raw materials, so as to assure uniformity of technologies, utilization of secondary sources of energy, integration of the operations of the plant as a whole, and further perfection of production, among other things by complex mechanization and automation; fourthly, it is necessary to bring processing to the sources of raw materials and the places they are used.

In this connection it appears to us necessary to pose for discussion a number of questions in the field of integration of production that require decision at the government level.

A basic problem of the current seven-year period is that of accelerated development of the national economy on the road to communism, the problem of gaining maximum time in the peaceful economic competition between socialism and capitalism. Solution of this problem will be attained by the most efficient channeling of the enormous capital investments to be made, so as to bring about growth in production capacities at minimum outlays of funds and to raise the output of industrial production in short order, with a sharp rise in labor productivity and reduction in the cost of production. The target figures propose a total investment of over 650 billion rubles in the branches of industry in which the production of a multiplicity of products by single enterprises occurs, i.e., the chemical, light, foodstuffs, forestry, paper and wood-working, the petroleum and gas industries, metallurgy and the building materials industry.

100 to 105 billion rubles is to be invested in the development of the chemical industry alone. About half of these funds will go to the building of enterprises manufacturing plastics, artificial and synthetic fibers, synthetic rubber and alcohol. 140 very large chemical plants will be built from scratch or completed, and over 130 will be rebuilt. Very large integrated enterprises for the processing of refinery gases, natural gases, casing gases and other raw materials will be built. Also planned is large-scale construction of separate chemical plants, such as those producing nitrate fertilizer, superphosphates, etc. In a number of districts, it appears desirable that a number of the independent plants planned be erected as part of integrated operations. For example, to produce combined nitrate and phosphorus fertilizers, all one needs is the simplest plant-wide services of a superphosphate plant, which can be performed without major expense by means of the plant-wide facilities of a nitrate fertilizer plant, etc.

In the reconstruction of the 130 chemical plants, it is also necessary to integrate them, with the view toward a greater combination of successive stages of treatment of raw materials up to and including the production of the finished product. Large added production capacities in this direction are attainable by more rational integration of the petroleum chemicals industry (i.e., by combining the oil refineries and chemical plants now in operation in the vicinities of Kuibyshev, Ufa, Grozny, Orsk, Omsk, Saratov, etc.). This is facilitated by the fact that they are close to each other, and this makes possible a more complete utilization of the reserve capacities in production and in plant-wide services, to increase output at the smallest possible investment.

It would appear to be economically efficient to continue the combination of chemical with metallurgical and coke-chemical plants and plants for the manufacture of building materials.

In the coking of coals, the resultant coke gas contains ammonia, ethylene and other useful products capable of efficient utilization in production, i.e., of superphosphates for complexed fertilizers, and also for the production of plastics.

Particularly favorable conditions for the integration of large chemical plants now in operation so as to process complex raw materials, exist in Bashkiria, Kuibyshev Oblast, Baku, etc. In the vicinity of Kuibyshev, for example, it is planned to build a number of new chemical plants, a portion of which might well be integrated. In the old centers of the chemical industry — Berezniki, Stalinogorsk, Dzerzhinsk, etc. — the reconstruction of plants on the basis of integration will make for greater output in very short order.

The food industry also presents great possibilities for integration. Over a seven-year period, about 250 new meat-packing plants, over 1,000 dairies, more than 200 canneries and other enterprises will go into operation. Many of these enterprises are capable of being integrated, and this makes possible a more complete utilization of productive capacities by keeping them busy uniformly through the year. Experiences acquired in the building of combined sugar, canning and meat-packing and dairy plants in the Kuban provides convincing evidence of the high degree of economy provided by this form of organization of production.

Integrated production permits elimination, to a considerable degree, of the former mistaken practice, in the design and location of plants, in which a single district or even town saw the establishment of independent, isolated plant-wide services without consideration of the need for cooperation with other enterprises. In Pavlodar, for example, it is planned to build oil refineries and aluminum plants, and also a number of other enterprises to a total cost of about 10,000,000,000 rubles. Many of these plants are directly related, technologically, in terms of the treatment of raw materials and intermediates. However, administrative barriers create excessive intermediate stages, ruling out the possibility of assuring a unified technological, economic and managerial process. Integrated enterprises make it possible to eliminate these shortcomings, reduce capital investments and the cost of production.

Thus, it is desirable that planning and business agencies exercise the utmost care and make the most careful economi calculations in approaching problems of location of enterprises in the various economic administrative districts, and that, in addition to specialization of the enterprises being built, and to rational collaboration among them, they provide for large-scale integration of enterprises under construction and in operation.

In our opinion, questions of the distribution among national economic councils and government executive committees of the enterprises that had been under local and republic governments were not resolved quite properly. It appears to us that errors were committed, the result of which was that, in a number of economic districts, certain enterprises were separated from their supplies of raw materials or their supplying plants. The reorganization mainly affected the foodstuffs, light, wood-working and other branches of industry, which are in the most favorable position for rational integration of production. The separation of enterprises into numerous small units causes serious harm to government interests, results in substantial additional expenditures on administrative personnel, inhibits technological re-equipment of these enterprises and improvement of production processes, and sets up unnecessary intermediate stages.

The enterprises in local industry combining different types of production, as now organized, should be reorganized along the lines of integrating related fields. The merging of these enterprises will make possible modernization of their equipment, greater mechanization, and the best possible utilization of hidden capacities.

The concepts advanced above indicate the vast economic significance of the integration of lines of production called for in the Seven-Year Plan. However, a number of situations now existing in the fields of finance, planning and the like obstruct the integration of industry. Specifically, it is necessary to instruct the USSR Finance Ministry and the Government Committee of the USSR Cabinet on Labor and Wages to develop new rules to provide incentive for the integration of industries. It would appear desirable to establish groups to study the organization of integration, within the planning agencies and the national economic councils. This will make it possible to find and utilize enormous hidden reserves for production.

Thus, in our opinion, the Seven-Year Plan should specify that, not only specialization, but integration of lines of production constitute matters of fundamental importance to the successful solution of the economic problems involved in the upbuilding of a communist society.

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Finally, it is necessary to proceed further with combination of construction organizations and the assignment thereof to particular districts where construction is proceeding on a particularly large scale. Specialization in the form of districting and combination of construction organizations and the system of supply thereto on the basis of areas of intensive construction will permit a pronounced improvement in the structure of production, a significant elimination of unnecessary units, and the economizing of hundreds of millions of rubles per year in the reduction of the administrative apparatus alone.

Districting will also create the conditions necessary for the development of local initiative and improvement in the responsibility of local Party and government institutions. In their totality, all these measures will make for a more successful fulfillment of the seven-year plan for the development of the economy of the USSR.

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M. Brenner:

Some Economic Problems in the Development of the USSR Petroleum Industry

An important place in the target figures for the development of the Soviet economy in 1959-1965 is allocated to the petroleum and gas industry. During the next seven years, the petroleum and gas industry is to leap forward at a rate unprecedented in the history of industrial progress. The recovery of petroleum is to rise from 113,000,000 tons in 1958 to 230-240,000,000 tons in 1965, and that of gas from 30,000,000,000 cubic meters to 150,000,000,000 cubic meters.

The increase in petroleum production set forth in the seven year plan exceeds the total increase in petroleum output (104,000,000 tons) during the entire period that has elapsed since the nationalization of the industry (1917-1958).

The development of the petroleum and gas industry projected for 1959-1965 is also of pronounced economic significance because attainment of the proposed level of petroleum and gas recovery, and maintenance of a high rate of development in these fields in the following years will make for important changes in favor of the USSR in the world balance of petroleum and gas production. For a considerable time, now, the development of the petroleum industry of the USSR has, in rate of and absolute growth in output substantially exceeded the growth of this branch of industry in the USA, the result being a rise in the role of the Soviet Union in world petroleum output. Thus, during the past 10 years, the output of petroleum in the USSR has risen by 84,000,000 tons, or nearly 4-fold, while that of the USA has gone up 55,000,000 tons, or 20%.

Moreover, a substantial drop in petroleum extraction was recorded in the USA in 1958.

The respective shares of the USSR and the USA in the world petroleum picture during the past decade are described by the following data (%):

	1948	1958
USSR	6.0	12.5
USA	59.0	37.0

Analysis of the factors governing the development of the petroleum industry in various countries permits the forecast that in 1965 the USSR will provide 20 or 22% of world output, while by early 1972 our country will overtake the USA and come to occupy first place in the world.

A fundamental change has been made in the fuel policy of the USSR toward an all-out effort to increase the percentage of petroleum and gas in the total volume of fuel produced. The percentage of petroleum and gas in the total recovery of mineral fuel grew from 24% in 1955 to 31% in 1958. In view of the significant economic advantages inherent in the use of petroleum and gas, this meant a vast saving in social labor. However, the structure of extraction of mineral fuel in the USSR differs significantly from that in the USA, where petroleum and gas were 67%, and coal represented 33% of the total volume of fuel production. This difference in the structure of the fuel balance of the USSR and the USA will be eliminated in the next 15 years, while a fundamental change in the fuel pattern will be recorded in the 1959-1965 period. The share of petroleum and gas will rise from 31% in 1958 to 51% in 1965, and that of coal will decline from 59 to 43%. This will permit solution of the problem of meeting the fuel needs of the country, and will at the same time result in great savings. Therein lies the major economic significance of the fuel policy now being pursued in the USSR.

In evaluating the relationships existing in the structure of the fuel balance of the USSR and the USA it must be borne in mind that the drop in US petroleum production and the poorer prospects for future growth within the country provide no basis for expecting any considerable change, in the years immediately ahead, in the share of petroleum and gas in the US fuel picture. It may confidently be expected that in the course of the peaceful economic compeition of the two systems, the advantages of the planned socialist economy, to which recession and crises of overproduction are foreign, will make it possible for the USSR to come quite close to the USA in volume of petroleum production as early as 1965.

Real material conditions exist for the achievement of the increase in petroleum production set forth in the target figures. The petroleum industry of the USSR possesses major reserves of petroleum, a highly developed oil production technology and the required equipment, and these make possible a substantial rise in the rate of petroleum output at fields already being exploited, as well as the required rate of production at formations being opened for development.

Determination of the rates of increase in petroleum production in the country during the seven-year plan, and a proper forecast of the directions to be followed in further improving the distribution of the petroleum and gas industry, are most important.

The rates of increase in petroleum production during each of the years of the seven-year plan are determined by the launching of new extraction capacities, by the nature and yield rates of new pools, by the degree to which recovery can be stepped up at formations now being exploited, by the speed at which drilling progresses, and by other factors. An analysis of the present status of oil field operations, of the degree to which explored reserves are available to the USSR petroleum industry and that of its various districts, and the prospects for the discovery of new petroleum resources makes it possible to foresee a rise in the annual rate of increase in petroleum production from 15 to 16,000,000 tons in the first years of the seven-year plan to 19-20,000,000 tons in the later years.

The problem of the rates and scales of development of petroleum output in the various economic regions is a more complex one.

During the post-war years (1946-57), as the result of the discovery, in many parts of the country, particularly the East, of extremely rich pools of petroleum, and the development thereof in accordance with the last word in technology, exceedingly important shifts, of importance to the country as a whole, have occurred in the economic geography of the USSR petroleum industry.

While the output of petroleum was rising more than 3-fold in the years from 1940 to 1957, the share of various areas in the overall production of oil underwent the following changes in percentage:

	1940	1957
Caucasus	87.1	24.3
Volga-to-Urals	6.0	66.0
Central Asia and Kazakhstan	4.8	6.8
Other districts	2.1	2.9

The point of greatest economic significance in these shifts in the location of the petroleum industry lies in the fact that the Volga-Ural and the central districts of the country adjacent thereto are the major consumers of liquid fuel, and this makes possible a more rational location of the oil refining industry, an approximation of the production of petroleum products to the areas of consumption. The vast economic advantages of the exploitation of the exceedingly rich oil formations in the Volga-Ural districts lie in the fact that the capital investments required to bring about an increase of 1 ton in output, and the cost of 1 ton of oil here are approximately one-third as high as the average for the field, and only 1/6 to 1/7 of the cost in certain other districts.

The share of the various districts in the total capital investments for expansion of the petroleum industry and in the rise in oil output for the USSR as a whole from 1946 to 1956 define the efficiency of such investments in the various districts of the country.

	Percentage share	
	of capital investment	of rise in output
Volga-to-Urals	35%	78%
Caucasus	44%	14%
Central Asia and Kazakhstan	12%	6%
Other districts	9%	2%

The high efficiency of capital investments in the district of the Volga to the Urals, which is many times greater than that in other districts, has made it possible to treble petroleum output in the USSR since the war and radically to improve the economic geography of the industry while saving billions of rubles.

However, it cannot be held that the problem of rational location of the Soviet petroleum industry has already been fully solved. In a number of districts where consumption of petroleum products is high, the level of development of petroleum recovery seriously lags behind the ever-increasing need for oil. In some of the country's industrial centers, the necessary prerequisites for the establishment of a petroleum industry have not yet been prepared.

The theses of the report by Comrade N. S. Khrushchev at the 21st Congress of the CPSU state that the major changes in economic geography are to be primarily in the direction of accelerated development of the economies of the eastern districts of the country, including the Urals, Siberia, the Far East, Kazakhstan and Central Asia. The percentage share of petroleum production in these districts will represent approximately 30% of the output in the USSR as a whole. In other words, it is planned to produce 70,000,000 tons of petroleum in the Eastern districts of the USSR in 1965 as against 28,000,000 tons in 1957. This will play an important role in the further development of the country's powers of production and will make for an improvement in its economic geography. The development of a petroleum industry in Siberia, where indications very favorable to the presence of gas and oil have recently been found, will be of high importance. Siberia is one of the largest consumers of petroleum fuels, millions of tons of which are transported into that area at enormous expense.

Districts in the European portion of the USSR will retain the lead in the development of the petroleum industry in 1959-1965. The highest rates of petroleum production are scheduled for the Tatar and Bashkir Autonomous Republics and for Kuibyshev Oblast.

The presence of very large petroleum resources in the Tatar ASSR, the Bashkir ASSR and Kuibyshev Oblast, along with the new and highly-efficient technology of exploitation of petroliferous strata, the substantial amounts of equipment available, and the closeness of the fields to the areas of consumption of petroleum products make for high rates of increase in petroleum extraction in these districts. It will be possible to more than double petroleum output here in seven years, relative to the figure for 1958.

The target figures ascribe importance to the development of the petroleum industry in districts where high-quality oil is recovered, particularly the Azerbaidzhan SSR, where oil output is to rise by 33% from 1959 to 1965.

The priority development of petroleum extraction in the European USSR, the substantial rise in the rates of growth of the oil industry in the Central Asian republics, the Azerbaidzhan SSR, the Ukrainian SSR and the Far East, and the organization of a petroleum industry in districts of Siberia, along with the building of petroleum refineries and oil and gas pipeliness in 1959-1965 will make for a substantial improvement in the distribution of the petroleum industry and a further upsurge in the economies of the nationality republics.

% Share of Various Republics in All-Union Petroleum Recovery

	1913	1958	1965 (approx.)
RSFSR		78.0	82.0
Ukraine		1.0	2.5
Uzbek		1.0	1.5
Kazakh		1.2	1.2
Azerbaidzhan	74.6	14.0	9.3
Turkmen		3.7	3.1
Kirgiz		0.4	0.4

The volume of petroleum refining projected for 1959-1965 will meet the needs of the national economy for petroleum products in full. The establishment of rational proportions between the resources of raw materials and refinery capacity will still remain a major economic problem. Solution of this problem is planned to proceed by doubling primary refining capacity in 1959-1965, raising catalytic cracking to 4.3 times its present level, catalytic reforming by 16 to 18 times, and by doubling the output of lubricants. In view of the exceedingly backward state of catalytic reforming in the USSR and the efficiency of this process of producing high-octane fuel, it is necessary to look for possibilities of increasing the capacity scheduled to be attained.

One of the most important economic problems in developing the petroleum industry in the USSR during 1959-1965 and the subsequent period is the rapid building up of reserves and the attainment of proper ratios of oil and gas reserves to current consumption both in the country at large and in the various districts.

The theses of Comrade N. S. Khrushchev's report inform us that the total volume of geological prospecting is to be increased by approximately 65% for the purpose of assuring rapid development of the country's productive capacity in the future and the planned rise in supply of mineral raw materials to the national economy. First priority goes to a sharp upturn in geological prospecting for petroleum and gas, and to the prospecting and exploration of occurrences of rich and readily concentrated ferrous and nonferrous ores.

The increase in petroleum resources in 1959-1965 will significantly exceed the corresponding rise in resources recorded for 1952-1958. Along with a further pronounced increase in petroleum resources in the European portion of the USSR, there will be a rise in the percentage share of the Central Asian petroleum-and-gas fields, the Ukrainian SSR, and the North Caucasus. The increase in gas reserves during the Seven Year Plan will be considerably greater than during the entire previous history of development of the gas industry. It is necessary to continue a persistent search for petroleum and gas resources in Siberia and the Far East.

The ratios between current petroleum consumption and reserves, planned for the 1959-1965 period, are to be achieved by continually increasing the economic efficiency of geological prospecting. The efficiency of geological prospecting for petroleum in the USSR is determined by a number of indices in combination: the provision of reserves to industry, the rate at which reserves are increased each year, and the capital investments and labor outlay required for the discovery of each ton of reserves.

In recent years the USSR has come to occupy first place in the world in the efficiency of geological exploration for petroleum. The directions to be followed in attaining a further increase in the economic efficiency of geological exploration for petroleum are determined by the selection of and adherence to, for the period covered by the plan, of the directions in prospecting and exploration that offer the greatest possibilities for providing both to the USSR as a whole and to the individual districts the necessary ratios between oil reserves and output. Also involved is rational territorial distribution of the reserves explored, and an increase in the pace of exploration, particularly at depth, and the provision of new and efficient equipment for exploration, up to the saturation point.

Improvement in the economic efficiency of geological exploration for petroleum in the USSR is chiefly dependent upon the methods of prospecting for and exploring the pools and the progressiveness of these methods. Inadequacies in the elaboration of the theoretical foundation of petroleum geology, absence of precise criteria in the prospecting of petroleum in various geological conditions have been reflected in a number of districts in the comparatively high percentage of dry holes, in dragging out the time required for prospecting and exploration of petroleum structures and, in the long run, in a rise in capital investments in exploration and the preparation of reserves. The plan for the development of the industry in 1959-1965 must embody trends in petroleum prospecting and exploration that can withstand investigation from every viewpoint, and that are efficient in the sense of an increase in reserves as well as in the light of the need to speed the rate of exploration and to develop progressive geophysical methods of exploration in every possible way, to perfect the methods of prospecting petroleum and gas pools.

The petroleum industry of the USSR is expected to develop at an accelerated pace both as the result of opening new oil fields to operation and by further rationalization of the conditions for the development and exploitation of petroleum formations already in use, with the object of improving their efficiency.

The efficiency with which petroleum and gas pools are developed is governed by numerous factors, the most important of which are the yield of the petroleum and gas strata exploited, the level of development of the technology and equipment, the quality of the petroleum in the formation, the system of well spacing, the rates and cost of drilling operations, etc. The most inclusive indices of efficiency in the exploitation of petroleum and gas formations are, in addition to attainment of the desired rise in petroleum and gas output, the unit capital investments and the volume of drilling required to attain a one-ton increase in output of gas or oil.

The discovery, in the postwar years, of exceedingly rich petroleum deposits in the Devonian, and the development of these pools on the basis of a pronounced improvement in the technological level of exploitation and a scientifically rational well spacing have made possible a significant change in the economic ratios existing in petroleum recovery and solution of the problem of expanded reproduction of the petroleum industry at an enormous saving in the labor of society.

The USSR has already significantly surpassed the USA in the technological level at which the development and exploitation of its natural resources of petroleum are conducted. Despite the fact that the oil formations exploited in the USSR are more complex, the systems of development and the technology of exploitation thereof are more advanced, and the efficiency of petroleum extraction is higher than in the USA.

One of the paths to be followed in solving the problem posed in the theses of Comrade N. S. Khrushchev's report — that of attaining the required level of petroleum production at minimum cost — is further extensive utilization of a new and progressive system of developing, and a technology of exploiting, large oil pools, based on the principle of artificially separating the formation into walled-off areas. The exploitation of these fields, with maintenance of pressure in the strata, makes for the most complete recovery of the reserves therein, at high rates and low costs.

An example of highly-efficient development is the Romashkinskoe field, now being exploited, and constituting one of the greatest on earth. The separation of this field into 23 separate areas has made it possible to attain a high rate of petroleum output in a brief period and to advance the Tatar ASSR to first place in the country in petroleum output and in efficiency of exploitation of petroleum formations. The total time required to empty the Romashkino formation will, as a result of this new and progressive system, be cut from 350-400 to 40 or 50 years, and the number of wells required is cut from 20-25,000 to 5-6,000, at a saving of not less than 16-18,000,000,000 rubles.

Improvement in the technology of exploitation of petroleum formations represents a radical trend in the further development of the oil industry.

A major economy may be attained by more rational disposition of the wells relative to the structure of the petroleum stratum. Scientific and experimental studies recently made at one of the formations in the Tatar ASSR has demonstrated the real possibility of markedly increasing the spacing of the wells, and attaining thereby the desired level of petroleum output from the field and the most complete extraction of the reserves present, with a vast financial saving.

Drilling for production purposes will rise significantly in 1959-1965 in connection with the forthcoming opening of many new oil pools. More than 25,000 new wells, costing 18- to 20,000,000,000 rubles, will have to be drilled and brought into operation during the seven year period. Naturally, reduction, by all possible means, of the cost of drilling the new wells, will become one of the major economic problems before the developing petroleum industry.

The present level of development of drilling equipment and technology permits us to pose the objective of attaining a substantial change in the rate of drilling oil wells in the immediate future, of raising the drilling speed by 150% to 200% on the average, and by 100% in deep drilling. Calculations show that if this objective is met it will be possible to save over 1,500,000,000 rubles as early as 1959-1965, and, during the following seven-year plan, over 4-4,500,000,000 rubles, relative to 1958.

In this connection it will be necessary significantly to increase the quality and mechanical strength of drilling and casing pipe, to introduce new, high-efficiency bits into use, to develop and perfect the designs of turbodrills, and electric drills, to drill wells of smaller diameter, etc.

The demands to be made upon scientific institutions will be greater, in the light of the development of the petroleum industry outlined by the seven-year plan. It will face many important problems — the development of a reliable working theory of petroleum prospecting and exploration under various geological conditions, an improvement in the efficiency of the present methods of prospecting and the development of new ones, further improvement in the petroleum yield of oil-bearing strata, advancement of the existing methods of development and exploitation of petroleum pools with regard to the type and nature of the oil-bearing strata, the invention of new and highly-efficient systems of development, improvement of the mechanical means used in oil fields to withdraw the petroleum from the wells, to collect, store and transport the petroleum, development of a theory of rock decomposition, design of new, high-efficiency bits for high-speed drilling, and perfection of the existing and development of new drilling techniques.

Serious investigations must also be made into the economics of the industry.

The fullest investigation must be made of problems of providing correct proportions in the development of particular branches of the petroleum industry (extraction, preparation of reserves, drilling, refining, transportation) and also of the development of the petroleum industry in the various economic districts, study of methods of increasing labor productivity and cutting costs, development of scientific methods of planning, and determination of the efficiency of capital investments and new technology.

In recent years there has been inadequate progress in petroleum economics, and in the work of providing a rationale for the plans for developing the industry and the quality indices therein. The plan for the development of the petroleum industry and its various branches (prospecting and exploration for oil, drilling, exploitation, refining, etc.) continues, as in the past, to be developed chiefly on the basis of quantitative indices, usually resting upon statistical standards. Problems of efficiency, however, find virtually no reflection in the calculations for and the very plan of work of many enterprises in the extractive industry. Yet the planning of the development of the petroleum industry in a district, a group of districts, a republic and the country as a whole should begin specifically with a study of and development of a rationale for indices of a qualitative nature, efficiency indices in the first place. This would permit a more profound investigation of the differences in the level of development of the various branches of the fuel industry and of petroleum output in the respective districts of the country, in the expenditures of social labor upon increasing the recovery and refining of petroleum, and in the prerequisites for and prospects of development of the petroleum industry, and would also make for a more profound rationale for the rates of increase in the output and refining of petroleum, the proper determination of proportions in the development of the various branches of the petroleum industry and in the development of this industry in the various districts of the USSR, and a more rational distribution of capital investments and an increase in the efficiency thereof.

There must be a fundamental reorganization of the planning of technological progress and in the introduction of new techniques and equipment. The compilation of technical plans in descriptive form must be replaced by a specific and organic coordination of the plan for introduction of new equipment with the plan for output, while planning must reflect the quantitative and qualitative changes in production resulting from improvement in technological level. The scientific research institutions in the petroleum industry must be provided a wide field for activity in this respect.

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A. Sumin:[*]

The Application of Balance-Sheet Methods in National Economic Planning on the Republic Level

One of the most important aspects of the function of the Socialist state in the field of economic organization is the planning of the national economy. Improvement in the field of planning requires further elaboration of the theoretical and methodological problems involved in planning as well as perfection of the organization of all stages in planning work. The balance method is a matter that occupies an important place among the questions of methodology of government planning.

The Soviet Union is now entering a new and most important period in its development, the period of all-out upbuilding of a communist society. Under today's conditions the role of the constituent republics has increased considerably both in economic upbuilding and in the solution of the problem of better utilization of local resources and the possibilities for increasing the output of industry and consumer goods. This explains the increasing significance of balance calculations in the planning of the national economy not only of the Soviet Union as a whole, but of the constituent republics and the economic districts.

The economy of the Latvian territory, an integral portion of the economy of Russia, was characterized in 1913 by a high level of industrial production, with production of the means of production predominating. As a result of the twenty years of rule by the nationalist bourgeoisie, Latvia was converted into an agrarian and raw material producing appendage of West European and American imperialism. In 1938 the total volume of production was 81% of the level of 1913, and the share of industry therein did not exceed 36%. Only 1/4 of industrial production represented means of production.

Only during the years of Soviet power did the economy of the Latvian Soviet Socialist Republic begin to develop at rapid rates. Latvia's socialist industries, becoming the leading branch of the economy of the republic, scored particularly great successes. By 1955-56 industry represented 70% and agriculture 30% of gross production.

The steep upturn in production in the Latvian Soviet Socialist Republic, outlined in the seven year plan for the development of the national economy, will lead to the establishment of new ratios and relationships within the economy and will render the economic ties among branches of the economy, both within the republic, and between the Latvian economic region and other economic regions of the U.S.S.R., more varied and complex. All this is reason for a further improvement in the planning and statistical work and for large-scale application of balance accounts.

Planning practice in the economy of the Latvian SSR makes use of balance accounts, reflecting the interrelationships among the branches and spheres of reproduction in the economy of the republic. The balance system is also used in developing current and long-range plans. Moreover, the experience acquired in the utilization of balance accounts in the planning of the Latvian economy shows that a number of problems in the field of planning remain unresolved. Thus an improvement in the field of balances in the constituent republics and the economic regions of the country will serve as the foundation for a study, in the first place, of interregional and interrepublic economic ties, which have hitherto had inadequate study. In order not to permit partial and temporary disproportions to arise, it is necessary to perfect the pattern and methodology of elaboration of the economic balance, on the basis of the Marxist-Leninist theory of reproduction, and the accumulated experience in socialist planning. All balance activities in the field of government planning must be organized on the basis of a unified program, with consideration of the specific peculiarities of the various economic regions of the USSR. The State Planning Commission of the USSR and the Central Statistical Administration of the USSR, as well as the state planning commissions and statistical administrations of the constituent republics, must demonstrate initiative in this respect.

The pattern used for the national economic balance includes only the most important indices required for elaboration of the state plan. Therefore each index must be deciphered and supplemented by an extensive system of balances of materials and costs as well as by balances representing the labor force, elaborated both for the USSR economy as a whole, with breakdown by branches of the economy, forms of ownership, and also in terms of the economies of the constituent republics and the economic regions of the country.

The experience acquired in calculating balances of materials in the planning of the national economy of the republic creates the possibility for determining the relationship built up over a number of years between material resources on the one hand and the requirements therefor on the other, and to advance problems the solution of which would be of major significance for further economic developments, as well as to reveal existing or incipient partial disproportions in the national economy of the republic, and to take measures to eliminate them. In this connection, certain data from the balance for electric energy, lumber resources, and the balance for agricultural production in Latvia, are of interest.

Electric energy balance. Electrification is the foundation for the development of the most modern technology and increase in the productivity of the labor of society. Further increase in the productive forces of socialist society depends to a considerable degree upon providing priority rates of development for the production of electric energy as compared to the rates of growth of other branches of the economy.

The most important consumer of electrical energy in Latvia is industry, which, in the past ten years, has required, on the average, 53% of all the electrical energy developed. Housing and public services represent another major consumer. During the post-war period, agricultural consumption of electrical energy has increased at rapid rates. The share of transport in the consumption of electrical energy has increased.

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[*] Riga.

However, in the post-war years, the growth of industry has proceeded at more rapid rates than rise in production of electrical energy in the republic. The gross production of industry in Latvia increased more than 5.8 times from 1940 to 1955, and by 93% from 1950 to 1955, while the production of electrical energy rose, correspondingly, by 3.7 times, and by 88.3%. From 1949 to 1954, the average annual rates of increase in industry was 16.6%, annual production of electrical energy 13.6%. At the same time, the consumption of electrical energy by housing and public services during a fifth five year plan rose by 64%, that by transport doubled, that by agriculture increased 3.4 times. Only with the launching of operations by the Riga heat and power plant, did it become possible fundamentally to meet the electric power needs of the republic. However, if the production indices for electric power in Latvia be compared with the most important economic indices of the republic and the data for the USSR as a whole, it becomes clear that the level of electric power production in Latvia is inadequate. In 1955, Latvia had 1% of the population of the USSR, over 1.1% of its personnel gainfully employed in industry, 0.8% of its capital investment in industrial production, but only 0.5% of its production of electric power. Production of electric power per head of population in Latvia is nearly 50% less than the average for the Soviet Union. Therefore, in 1955, the level of development of electric power production in Latvia was five or six years behind that of the USSR as a whole. This means that problems of electric power economics and the substitution of other forms of energy for it become quite important. Provision of gas and piped heat to Riga, where the most important consumers of electric power in that republic are located, becomes of special importance in saving electricity. The construction of the Dashava-Minsk-Riga gas pipeline and the elimination of the lag in construction of a system of piping heat from the Riga heat and power plant are of great importance.

In order for Latvia to attain the USSR average in electric power output per head of population so as to correspond to the republic's share in the number of workers and the volume of industrial production, it is necessary to bring about virtually twice as rapid an increase in electric power production as that of industrial production.

Forestry resources balance. The question of rational utilization of timber resources is of major importance to Latvia. The woodlands of the republic, considered in terms of availability for cutting, fall into Group Two forests, in which the system of felling is governed by special rules. The amount of lumber produced per year must not exceed the calculated cutting. Therefore, in compiling drafts for annual and long-range plans it is necessary to give due consideration to the state of the available lumber resources so as to prevent possible future disproportions between the lumber resources of the Latvian republic and the utilization thereof.

The wood balance of Latvia (except firewood) for 1951-1955 is described by the following data (in thousands of cubic meters).

	1951	1952	1953	1954	1955
Resources					
Total Including:	3070	3225	2640	2645	3090
Government Forestry Fund	2874	2940	2378	2200	2475
Woods Owned by Collective Farms	188	275	152	190	215
Specially Allocated Woods	8	10	10	10	10
Import of Lumber Consumption	-	-	100	245	390
Total	2200	2580	2130	2355	2720
Including:					
Industry	1010	1295	1200	1255	1445
Construction	1190	1285	930	1100	1275
Shipment Out of Latvia	870	645	510	290	370
Total	3070	3225	2640	2645	3090

Consequently, the average annual consumption of wood in Latvia, except firewood, during these five years came to the following: 1,241,000 cubic meters for industrial needs, 1,156,000 cubic meters for major construction, fundamental repairs, and collective farm construction, for a total of 2,397,000 cubic meters, while in 1955 the total was over 2,700,000 cubic meters. However, the average annual calculated cutting of wood in Group Two forests, calculated on the basis of data on the reserves of mature and over-mature timber, comes to about two million cubic meters, while the yield of wood suitable for other purposes than firewood comes to approximately 1,400,000 cubic meters. Cutting in the government's forests for drainage and reforestation purposes yields approximately 440,000 cubic meters of workable wood, and another 280,000 from the collective farms and the specially allocated forests. As a whole, the resources of workable wood in the republic come to approximately 2,000,000 cubic meters per year. Thus, in the post-war decade, the volume of consumption of wood exceeded the annual calculated cuttings by an average of 50%, although this was only one-half of the amount cut in the pre-war years and during the occupation. Nevertheless it still exceeded the desirable standard. With the permissible cuttings at about two million cubic meters, the release of lumber in 1947-1955 came to an average of 2,900,000 cubic meters for prime purposes of utilization. As a result of this the ratio of age groups in the forests of the republic continues to worsen, as is evident from the following data:

Age Groups of Forests in Latvia, as percentage of Total Forests

	1937	1953	1955
Seedlings	37.5	45.2	44.4
Medium Age	26.8	24.0	26.2
Maturing	13.5	14.5	13.5
Mature and Over-Mature	22.2	16.3	15.9

In 1937 the area occupied by mature and over-mature plantings in the republic as a whole, within Group One and Two forests, came to 286,000 hectares, with 54 million cubic meters of resources, but in 1953 it totalled only 218,000 hectares, with 41 million cubic meters of wood. The data show that the cutting of mature plantings is not compensated for by the maturing of immature plantings, and that the quantity of wood cut will have to decrease constantly even if the cutting each year remains within the limits of the amounts calculated. Within a ten-year period, the republic, if the cutting remains within the allocated figure (approximately 1,800,000 cubic meters), will obtain 1,120,000 cubic meters of workable wood from government cuttings, and 840,000 cubic meters twenty years hence. Should the cutting of wood each year be in larger volume, the procurement of wood by the government will, within 15 or 20 years, cease to be of commercial significance, and the paper and cellulose, plywood, and furniture industries of the republic will lack a supply of raw materials and will have to function completely on imported material.

Thus, the seven year plan must, with consideration of the rising need for lumber and the reduction in the amount of cutting to be expected in Latvia, envisage an increase in the import of lumber from the portions of the Soviet Union that have an excess thereof. In this connection, the questions of economy in the use of wood in industry and construction, and the substitution of other materials for it, acquire special importance.

Balance in agricultural production. An analysis of the balance in agricultural production is most important not only in terms of the relationship between resources and the consumption thereof, but in terms of the development of resources in the various fields of production. Latvian agriculture is characterized by the fact that the privately-owned sector is high in the overall output of agriculture. In this connection, income from the private plots of the farmers represents a significant part of the income of the collective farm family in Latvia. All this makes for the need for a further strengthening of the socialized portion of the economies of the collective farms in this republic. The socialized sector must come to occupy the predominant position in production, and income from the socialized economy of the collective farms must become the major source of income for each collective farm family.

Cost balances represent totalled syntheses. They reflect the distribution and redistribution of the national income, the relationship between the income and expenditures of the socialist state, between the volume of commodity turn-over and the monetary incomes of workers, white collar people, collective farmers and other groups of the population, the volume and circulation of money both in the country at large and within given administrative and territorial divisions. Balances of this type, which are of substantial importance in government planning, include the balances of monetary income and expenditure by the population, the savings plan of the State Bank and the government budget. Let us consider the first of these.

The major purpose of the balance of monetary income and expenditure on the part of the population is the establishment of proper relationships between the funds available to the population and the volume of commodity circulation, and consequently of the production of consumer goods and the dimensions of services paid for by the population. This balance is employed in planning the level of wages, of retail prices for industrial goods and foodstuffs. In addition, it reveals the circulation of money in the country and is the foundation for determining the quantity of money needed to serve circulation.

The income side of this balance includes the total monetary income of the population. This income consists of wages, pensions, benefits from the social security system, students' stipends, the monetary income of collective farmers received in accordance with labor-days earned, the monetary gain from sale of collective farm produce by government and cooperative agencies, lottery loan winnings, interest earned on savings, insurance payments, loans, as well as income due to travel expense accounts and other items not included within wages and salaries.

The dynamics and structure of the balance of monetary income and expenditure by the population of Latvia may be expressed in the following relative data.

	1957 as a Percentage of:	
	1950	1955
Total Monetary Income	173.7	121.1
Of these:		
Wages	145.5	112.3
Collective Farm Income	533.5	147.7
Income from Sale of Agricultural Produce	554.9	185.6
Pensions, Social Assistance, and Stepends	195.0	170.1
Total Monetary Outlay	173.7	121.1
Of this:		
Purchases	183.7	123.1
Payment for Services	166.9	117.0
Taxes and Levies	135.6	113.3
Savings	128.2	111.9

These data show that during the past seven years the monetary income of the population of the republic increased by nearly 74%, a reflection of the general rise in the living standard of the population. The wage fund, which rose 45.5% during this period, constitutes about three-fourths of the total monetary income of the population of the republic. The improvement in collective farm production during recent years resulted in a substantial increase in the monetary income of the population derived from the cooperative economy of the collective farms. While the average annual rates of increase in monetary income of the population from labor-day units was 13% from 1950 to 1953, it was 34% from 1953 to 1956, and in 1957 it was more than 60%.

The successful realization of the most important measures of the party and government to bring about a sharp upturn in collective farm production was reflected in the growth of the monetary income of the population from sale of agricultural produce. The repeal of compulsory deliveries of collective farm produce yielded about 35-36 million rubles of additional monetary income per year to the population of Latvia.

The passage of the new law on government pensions also substantially increased the significance of this source in the total monetary income of the population. The average monthly pension rose 80% in 1957, and the total monetary income of the population in the form of pensions rose by 228 million rubles a year.

Characteristic of the expenditure side of the balance of monetary income and expenditure by the population of the republic is the fact that the share of expenditures for the purposes other than purchase of commodities, plus savings, is declining in the total expenditures, and the percentage available for purchases is increasing.

During the last seven years, the savings of the population of the republic increased by 28%, payments by 36%, and payments for services by 67%, while all expenditures for transportation rose by 86%, expenditures for attendance at theatres, movies and other entertainments by 91%, and payment for communications services doubled. All this reflects the increase in the cultural demands of the population of the republic.

In 1957, the fund available for purchases in Latvia increased 84% over 1950, while the total increase in monetary income by the population during this period was 74%. The more rapid increase in funds available for purchases, when compared to increase in total income by the population, taken together with the reduction in retail prices, expresses the real rise in the material welfare of the working people.

Determination of the magnitude of the funds available to the population for purchases, characterizing its capacity to pay, is of high significance in planning commodity circulation in the USSR and the distribution thereof among the constituent republics, the regions, the territories, and the districts.

The mutual relationship between the magnitude of funds available for purchase by the population and the volume of commodity turn-over in government and cooperative trade will be indicated by relative data showing the relationship between funds available for purchase and commodity circulation. In Latvia, funds available for purchase were smaller than the total cost of the commodities sold to the population in government and cooperative trade during the same years, and the influx of money from other republics exceeded the outgo of money from Latvia. However, in the final analysis, if the magnitude of flow of money among republics and economic districts be considered, a direct relationship is found between growth in commodity circulation and increase in the funds available to the population for purchase.

The experience acquired in utilization of balance calculations in planning the national economy of Latvia shows that improvement in the system of government planning in the republic will depend upon the extent to which the balance method is used in the future. The greater the utilization of the balance method in the practice of planning, the smaller will be the omissions and the degree of lack of coordination in the plan, and the more precisely it will be possible to determine the prospects for the development both of the national economy as a whole and for each of its individual branches.

The employment of balance calculations for material goods in planning the economy of the republic and the USSR as a whole is of enormous importance. However, these calculations still do not completely meet the requirements. In particular, balance calculations continue to this day to be made chiefly in kind, and this means that the distribution of material goods cannot always be compared to the volume of production planned. Therefore the calculations of balances of materials must, in our opinion, be compiled simultaneously in kind and in value indices. The indices in kind should correspond to the indices for the plan of production, and the cost indices should correspond to the branches of the plan of production, construction, commodity circulation, and supply outside the market. Bearing this in mind, a balance of materials may be conceived of as being in the following form, as concerns the distribution of products. (See next page)

Balance calculations both for the past and for plans should be compiled both in kind and in cost under this scheme.

The scheme for distribution of production suggested provides an idea of the sale of the social product to various sectors of the economy and thus gives a description, within limits, of expanded socialist reproduction. This diagram should also serve as the basis for the elaboration of other balances, without which it is impossible to get along in planning the national economy. Thus, the magnitude of the funds of material goods, consisting of production required to guarantee construction, factory-wide equipment and machinery, equipment for purposes of technology and for power, building materials, lumber, metals and so forth, should, in their total value expression, correspond to the planned volume of major construction, while in their expressions in kind they should correspond to the plan of production. The dimensions of the fund for personal consumption must be coordinated with plans for supply outside the market and for commodity circulation. The plan for commodity circulation must correspond to the funds available for the population for purchase, and these are determined primarily by the wage funds, the income from collective farms, pensions, etc. Finally, the pattern proposed makes it possible, within the period covered by this plan, to carry out the required redistribution either in the direction of a given branch of material production, or to favor a specific sphere of services, and if necessary, to make the required corrections in other subdivisions of the national economy.

The need has now matured to proceed from utilization of separate balance calculations to complex balances. The elaboration of complex balances in the republics must be coordinated with a development of a balance for the economy of the USSR, and must, together with the latter, constitute a unified system of national economic planning. Therefore, those economists are correct who hold that the pattern for the balance of the national economy of the USSR suggested by S. G. Strumilin, member of the Academy, requires supplementation to show the regional economies.

Complex balances in the republics must embrace the sphere of production in the first place and then the sphere of circulation. In the sphere of production, these balances should reflect the relationship between the planned volume of production and the quantity of raw materials, basic materials, fuels and electric power required. In developing complex balances, the starting point must be an estimate of expenditures for the production of the entire gross production, regardless of the department to which the given enterprise is subordinated.

In comparing the requirements of industry as a whole for basic materials, raw materials, and fuel, with the availability of these resources in the republic, one is in a position to determine the lack or excess of resources, and consequently, the volume of shipments (export and import into the republic of various materials). This comparison makes it possible to prevent cross and irrational shipments, to determine the most rational ties between the republics, and also the long-range prospects for the development of particular branches of industry, with consideration of the availability of raw materials in the republic. This, of course, does not mean that if, for example, the production of rolled ferrous metals in Latvia does not at present meet the needs of the plants manufacturing machinery or working metals, that it is necessary to refrain from developing the manufacture of machinery within the republic. On the other hand, this poses the problem of maximum development of the production of metals and rational cooperation between the Latvian economic region and the other economic regions of the country.

In solving problems bearing on the paths of development to be followed in the future in various branches of production, it is necessary to take the probable needs of the national economy as the starting point, and not to be tied down to the data of a complex balance representing the situation at the present time.

The seven year plan for the development of the national economy of the USSR envisages a further specialization and complex developments of the economy both of the republics and of the large economic geographic districts. In this connection it is necessary to conduct a resolute struggle against the localist concepts of an integrated economy as an autarchic economy.

The transition to management of industry and construction on an area basis has eliminated the departmental barriers that gave rise to serious shortcomings in planning and not infrequently violated the production times among enterprises in the same economic district. At the present time, the state planning commissions of the constituent republics are fully competent to approach the compilation of complex balances of materials as well as balances of labor power and personnel. These balances should be fully reflected in the resources of production and other sources, and in distribution. in the needs of the given economic district. The job of the State Planning Commission of the USSR,

	total	including the following funds				
			for expansion			
				of which		
		reimbursement	total	fixed	circulated	consumption
Sphere of Material Production						
A. Production of Means of Production, Total						x
Including:						
a. For Production of Means of Production						x
b. For Production of Consumer Goods						x
B. Production of Consumer Goods						x
Total in Sphere of Production						x
Sphere of Services						
A. Public Institutions and Organizations, Total						x
Including:						
a. Social and Cultural						x
b. Housing and Public Utilities						x
c. Administration and Defense						x
B. Housekeeping, Total		x	x	x	x	
Including:						
a. Workers and White Collar Workers		x	x	x	x	
b. Collective Farmers and Members of Cooperatives		x	x	x	x	
Total in Sphere of Services						
Total for National Economy						
Government Resources		x	x	x	x	x
Export		x	x	x	x	x
Total Resources for Distribution						

is to organize and coordinate this work for the Soviet Union as a whole.

A complex balance in a sphere of circulation should include the basic data of the balance of monetary income and outlay on the part of the population, the plan of the State Bank for its savings offices, and the plan for commodity circulation. It should also be supplemented by balance calculations necessary to assure commodity circulation for commodities on which there are restrictions, those which are regulated, and those that are entirely unrestricted.

The balance of labor and skilled personnel is a complex balance that takes into consideration the existence of reserves of labor in a given district and the utilization thereof in all branches and sectors of production. Therefore, its compilation requires fundamental data for the collective farm sector of the economy as well: indices for the presence of a labor force, for the gross production of a collective farm, and the productivity of the labor of the collective farmers. Without these indices, it is not possible to determine the total requirements of collective farm production for labor resources, and the requirement thereof in the period when farm labor is most intensive.

The utilization of economic laws of socialism in practical work requires the further introduction of the method of balances, and the elaboration of a unified balance system for state planning. This is one of the conditions of improvement in government planning, a most important tool in the building of a Communist society.

S. Malinin:*

Present Problems of the National Economic Development of the Byelorussian Soviet Socialist Republic

The theses of the report by Comrade N. S. Khrushchev on the target figures for the development of the economy of the USSR in 1959-1965 outline a magnificent plan for the further developments of all branches of the socialist economy of our country. Each of the fraternal republics of the Soviet Union will make its contribution to the solution of the grandiose historical objectives of the upbuilding of Communism in our country.

During the upcoming seven year plan, the economy of the Byelorussian SSR will make an enormous forward leap, the realization of which has been prepared for by all the previous developments of the economy of the republic during the years of the upbuilding of socialism. During the seven year period, the gross production of industry in the republic will increase by 80%, including a rise of approximately 90% in production of means of production and of 77% in production of consumer goods. A number of branches of industry new to Byelorussia will appear: oil refining, chemicals, cotton textiles, the most important branches of the instrument-making and electrical equipment industry, the production of fine linens. Provision is made for further rapid development of the manufacture of machinery, of the fuels and power required to motivate industry, of the building materials industry and construction, and of various branches of the foodstuffs industry.

As the result of the fulfillment of the tasks posed in this seven year plan, Byelorussia will, according to the calculations of the State Planning Commission of the BSSR, pass the current level of the United States in production, per head of population, of machine tools, tractors, woolen fabrics, butter, and a number of other industrial products. In 1965, this republic will produce about 20% of the potassium fertilizer output of the USSR as a whole, and 19% of its tractors.

The agriculture of Byelorussia, which will specialize in intensive dairy farming and meat raising, the raising of pigs for food, of water fowl, of growing of potatoes, long staple flax, and sugar beets, is, in 1965, to attain a high economic level, as is testified to by the following data on the production of agricultural output per hundred hectares of farm lands (in centners):

	USSR (1965)	BSSR (1965)	USA (1957)
Grain	329-360	350-400	280
Potatoes	294	1,500-1,700	19
Meat (Slaughterhouse Weight)	32	84	29
Milk	200-210	500-550	101

More than 32 billion rubles, or more than twice as much as during the preceding seven-year plans, will be appropriated for the development of the economy of the republic.

It should be emphasized that the utilization of these resources will be carried out in the most economic and efficient manner possible. For example, replacement of a portion of the peat fuel currently used by natural gas will make possible a saving of 500-550 million rubles of capital investments in the republic in the seven-year period. The planned establishment in the BSSR of new instrument manufacturing and electrical machinery manufacturing enterprises, based on rational utilization of existing and hitherto incomplete manufacturing areas, will provide a saving of several hundred millions of rubles. Several hundred thousand gas ranges, required in connection with the provision of gas to the cities of the BSSR, will be manufactured on the basis of better utilization of the productive capacities of enterprises now existing in the republic, with virtually no additional capital investment. The building, at a number of seasonal brick yards, of artificial dryers, which will make it possible for these enterprises to function the year found, will make for a significant increase in the production of brick without major capital investments.

In connection with the discussion, prior to the Congress, of the theses of Comrade N. S. Khrushchev on the target figures for the development of the economy of the USSR in 1959-1965, it appears desirable to us to discuss certain pressing problems of the development of the economy of the Byelorussian SSR.

A new and important step in the further electrification of the national economy of the Byelorussian SSR will be taken in 1959-1965. It is planned to build and launch operations at a number of powerful thermal electric power plants: the Berezovo, the Vasilevichi City-and-District Power Plants (second unit), a heat-and-power plant at an oil refinery, and considerably to expand the capacities of a number of stations now in operation. It is planned to build more than 6,000 high voltage electric power transmission lines operating at 220, 110, and 35 kilovolts, and to create a unified Byelorussian power grid, which will connect all seven oblasts of the republic. Nevertheless some very important questions of electrification will not be completely solved.

In connection with the relative lag in the level of electrification of the Byelorussian SSR from the general level of electrification of the Soviet Union, and also in connection with the need to erect within the republic a number of large power-consuming enterprises, the Directives of the Twentieth Congress of the Communist Party of the Soviet Union for the sixth five year plan provided that the output of electric power in the BSSR be 110% greater in 1960 than in 1955, while for the USSR as a whole the increase planned was 88%.

The target figures for 1959-1965 envisage an increase of 160% in the output of electric power in Byelorussia by 1965. However, the increase in power capacity and transmission lines for the BSSR set forth by the State Planning Commission of the USSR is completely inadequate.

For the USSR as a whole an increase in the production of electric power and in the installed capacity of power plants is to be virtually identical, that is, 100-120%, while for the Byelorussian SSR, although power output is to rise

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*Chairman of the State Planning Commission of the BSSR.

160%, power capacity is proposed to be increased by only 110%. It should be noted that, in 1965, the power supply of the republic will continue to include over 150,000 kilowatts of capacity represented by small isolated locomotive and diesel plants, the average annual number of hours of utilization of which is quite low. In this connection, not only will a necessary reserve capacity not be established, but the shortage of electricity in the republic may even increase. In order to overcome the disharmony between the increase in electric power output planned for the BSSR and the planned increase in capacities, it is essential to provide for a greater installation of electric power capacities in 1959-1965.

Of no less importance is the problem of intensified construction of high power lines for transmission of electricity. If it be considered that the Byelorussian power system currently unites only 40% of the capacity of the power plants in the republic (while for the country as a whole the figure is 75%), and that only three of the seven oblasts of the republic are tied into the Byelorussian power system, including only five of the seventeen cities subordinate to oblasts and seven of the fifty-one towns subordinate to districts, and that the collective farms of Byelorussia occupy one of the lowest places in the country in the provision of electricity, the acuteness of this problem becomes obvious. Yet although installation of electric power plants using turbines in 1959-1965 is to be more than three times as great as in 1952-1958, the State Planning Commission of the USSR provides that transmission lines are to increase in length by only approximately 100%. This is inadequate. The lag in the construction of transmission lines in Byelorussia from the capacities to be introduced may result in a reduction in the rates of increase in electrification of the republic.

To speed the construction of transmission lines in the BSSR, as in the country at large, it is necessary to increase the production of steel-and-aluminum wire.

A most important role in the successful solution of the fundamental economic objective of the USSR is the development of various branches of the chemical industry, capable, at the present level of science and technology, of producing not only most important means of production, but the most varied and most useful consumer goods.

Despite the existence of significant resources of chemical raw materials, and the favorable economic conditions for the establishment of various branches of the chemical industry, mineral fertilizers and chemical pest-killers are not produced in Byelorussia today, nor do basic chemical industries exist, nor has the production of tires and industrial rubber goods required by the automotive and tractor, the motorcycle and bicycle industries been organized, nor the production of plastics and products made of plastics, or lacquers. The production of synthetic fibers is inadequate.

The economy of the BSSR is acutely in need of many products of the chemicals industry. Agriculture is desperately in need of mineral fertilizers. The machinery manufacturing and instrument manufacturing plants, the enterprises in the textile, shoe, glass, and foodstuffs industries, and industrial and housing construction in the republic all represent a large demand for rubber and plastic products, for lacquers, paints, artificial and synthetic materials, and artificial leather. Therefore the immediate need for the establishment of a number of new branches of the chemical industry in Byelorussia is absolutely obvious.

The target figures for the development of the economy of the USSR in 1959-1965 envisage the organization of major production of mineral fertilizers in Byelorussia. In 1959, construction of the Starobinsk Integrated Potassium Plant utilizing local raw materials was begun. It is planned to build two super-phosphate and nitrate fertilizer plants. Thus, the BSSR will begin to produce all the most important types of mineral fertilizers: potassium, phosphorus, nitrogen. The construction of these plants and the utilization of the fertilizers manufactured by them will make possible a sharp increase in the yield of agricultural products.

Taking into consideration the current need for the most rapid provision of mineral fertilizers to the country's agriculture, it is most important to resolve the problem of speeding the construction of the nitrate fertilizer plants in Byelorussia, and also that of the Starobinsk Integrated Potassium Plant, so that not only the first, but the second unit of the latter plants go into operation during the present seven year plan. This would make it possible to double the production of mineral fertilizers planned for the republic in 1965.

Utilization of these opportunities requires that the Government Committee of the USSR Cabinet on Chemistry, and the planning organizations subordinate thereto, provide plans and technical documents to builders on time. It is also necessary that the USSR's State Planning Commission envisage some increase in the capital investments to be made during the first years of the seven year plan both for the chemicals industry and for expansion of the production of building materials and strengthening of the building organizations whose job it will be to erect these enterprises.

The production of synthetic fiber will undergo a rapid development in the republic in 1959-1965. Output in this field will increase by 230%, and this will make possible an increase in the production of fabrics and knitwear.

The construction, in Byelorussia, of plants to make viscose cord as well as plants to make carbon black, lacquers and paints, a plastics plant, the establishment of the production of industrial rubber goods, a considerable expansion of the plant at Polotsk for the production of fiberglass, will make possible the creation in the republic of a complex of interrelated and cooperating chemical industries. A great saving to the economy will be brought about by the launching of production of plastic, artificial fiber, and other chemical products. Thus, for example, tentative calculations indicate that substitution of plastic parts for some parts now made of metal for the automotive vehicles produced by the Minsk Auto Works, will yield a 60 million ruble saving per year solely in increased truck carrying capacity, entirely aside from the large saving of metal. Moreover, the use of plastic parts at machinery-manufacturing enterprises will make it possible to release a portion of the existing productive floor space at these enterprises by eliminating operations involving the painting and drying of those metal parts that will be replaced by plastics.

The production of many new types of building materials is to be established in the republic, based on processing of synthetic polymer products and the wastes of reclaiming industries: polychlorvinyl linoleum and rubber linoleum, Linkrusta heat-insulating sheets, plastic equipment for sanitation techniques, polyethylene piping, breezol, etc.

The wood chemicals industry, that is already well advanced in the republic, will undergo further substantial expansion, and peat chemical enterprises will be established.

The construction of petroleum refineries and pipelines for natural gas in the BSSR will further expand possibilities for substantial development of various types of chemical production in Byelorussia.

The scale and rates at which it is planned to develop new branches of the chemicals industry in the BSSR, the construction of complex and technologically advanced chemical enterprises, poses the problem of the training of skilled personnel — engineers, technicians, and workers, for these new fields of production. Only about 200 engineers and 260 technicians of various skills are currently occupied in the chemical industry of Byelorussia. The Byelorussian Polytechnical Institute and the Byelorussian State University will graduate about 150 to 200 specialized chemists each year. However, as far as the majority of specialties are concerned (petroleum, mineral fertilizer, plastics, rubber, lacquers, paints, technologies) needed for the branches of the chemical industry to be established in Byelorussia in the present seven year plan, little is being done in the higher educational institutions as far as training is concerned. The training of chemical technicians with intermediate levels of education is not yet properly organized. All this poses the problem of a more extensive training of personnel for the chemical industry and also of assistance to the Byelorussian National Economic Council in the form of highly skilled chemical specialist personnel capable of organizing the launching of production at the new chemical enterprises to be built in the republic. The Byelorussian State University and Byelorussian Polytechnical Institute should provide the basis for an extensive organization of training and retraining of specialist chemists in their evening and correspondence divisions.

An important role in the further development of the chemical industry in the republic must be played by scientific research work in the field of the technology of the chemical industries, and also the creation of a planning and technological institute for the chemical industry under the National Economic Council of Byelorussia.

As a result of the rapid rise in the production of agricultural raw materials, favorable conditions will be established in 1959-1965 for a substantial increase, in the republic, of the output of various food industry products. The industrial processing of meat in Byelorussia will increase by approximately 140% in the seven years, the production of butter will double, that of whole milk will rise 180%, that of canned goods by 110%, etc. The production of confectionery products, macaroni, sausage and smoked meats, bacon, beer, cheese, and other food products will increase substantially. Expansion of sugar beet plantings and the construction of new sugar refineries will create the conditions for making Byelorussia a sugar-producing area and will permit an approximate sixfold increase in sugar production within the republic in 1965 over 1958.

The government-owned food industry, as well as the industry belonging to producers' and consumers' cooperatives in Byelorussia, will not be in a position to process the entire quantity of meat, milk, vegetables, and other food products produced in the collective and state farms of the republic. This is evident from a comparison of the data on the expected increase in marketed production by agriculture and the capacities of the food enterprises owned by the government and the producers' cooperatives for the handling of these products (in thousands of tons).

Thus despite the planned growth in the capacities of the food industries of the government and the producers' cooperatives, a substantial portion of the marketed output of the collective farms will not be able to be processed.

Therefore, the question of organization of collective farm and intercollective farm enterprises for the processing of agricultural produce that will remain in the hands of the collective farms after fulfillment of their obligations for sale of such produce to the government and after the satisfaction of the need of the collective farmers and the needs of farm consumption as such, is currently a very important matter. The material prerequisites for solution of this problem are available. The total monetary income of the collective farms of the republic in 1957 came to 3,800,000,000 rubles, exceeding that of 1953 by a factor of 3.5, and exceeding that of 1940 by a factor of 10.4. The average income per collective farm in 1957 was about a million rubles. The indivisible fixed capital of the collective farms totalled 3,573,000,000 rubles in 1957.

Organization in the collective farms of industrial processing of agricultural products is profitable for the farms themselves. In Byelorussia it is desirable that the majority of collective farms organize industrial processing of vegetables, fruits, milk and meat to a substantial degree.

In a number of districts of the BSSR, where the flax-processing industry owned by the government has been inadequately developed, and this pertains primarily to the western districts of the republic, it is necessary that the collective farms organize retting and scutching enterprises employing the TL-40 apparatus, while in districts where there is substantial available labor force, that even hand processing of flax be utilized.

Large-scale solution of the problem of organization, in the collective farms, of enterprises for the processing of residual agricultural products requires the drafting of standard plans for the construction of processing enterprises of small capacity, organization of the production, in the machinery-manufacturing industry, of the technical equipment required by such plants, and also solution of the problem of providing the collective farms with the required supplementary materials and crates. It is also necessary to assist the collective farms in training skilled personnel for work at these enterprises.

	1959					1965				
	marketed production		including government purchases and requisitions		capacity of industrial enterprises for the processing thereof	marketed production		including government purchases and requisitions		capacity of industrial enterprises for the processing thereof
	total	of which, collective farms	total	of which, collective farms		total	of which, collective farms	total	of which, collective farms	
Meat (on the hoof)	349	237	227	161	216	695	518	460	348	400
Milk	1331	888	935	733	820	2329	1749	1850	1514	1500
Vegetables	231	149	120	95	80	425	260	250	190	123
Fruit (collective farms)	-	40	-	-	20	-	150	-	-	40
Flax Fiber	72	72	72	72	50	95	95	95	95	63

*A. Kakharov:**

The Outlook for the Economic Development of Tadzhikistan

The extraordinary progress made in the economy of Tadzhikistan in the years of Soviet power, and particularly in the postwar period, does not mean that the economy of the republic is making full use of all the advantages of the Socialist planned economic system. The all-round development of the forces of production is still being inhibited by certain disproportions. The presence of various shortcomings is to some degree a residue of the system of management of industry and construction that was in existence up until 1957. For example, the annual output of electric power in Tadzhikistan is almost equal to one-half of the total output of all the power plants of Russia in 1913. However, there is a marked shortage of electric power in the republic, particularly during the winter. This has held back and will continue to inhibit the development of industry and other branches of the economy in the Tadzhik SSR.

Another important disproportion in the economy of the republic is the lag in the development of the building materials industry behind the rising volume of capital construction. Although Tadzhikistan possesses enormous resources of raw materials for the production of virtually all such supplies, work for the geological prospecting of the exceedingly rich depths of the republic has been carried out to an inadequate degree.

Tadzhikistan has also discovered areas that offer good prospects for finding gas and oil, but until recently no deep exploratory drilling toward this end has been carried out. This has held back the development of the fuel industry, has prevented elimination of consumption of long-haul fuel, and improvement thereby in the fuel economy, and has also inhibited the development of a chemicals industry, in particular the construction of enterprises for the production of synthetic fibers and plastics.

The unsatisfactory state of the roads also has a negative effect upon the development of the forces of production. The railway system of Tadzhikistan is small, and under the conditions in this territory, truck transport is the most important form. However, truck transport is rendered exceedingly difficult because of a mountainous terrain. For example, the roads of the Gorno-Badakhshan Autonomous Oblast and of other mountain districts are not open to traffic the year round. Our calculations show that the economy of the republic suffers a loss ranging up to 50-60 million rubles annually due to this.

The over-all volume of capital investments in the economy of Tadzhikistan (including investments by Glavgolodnostepstroy and departments under the government of the USSR as a whole) will come to over 10 billion rubles during the seven-year plan. This is almost three times as great as the comparable expenditures during the preceding seven years and is virtually equal to the entire investment in the economy of this republic during the total history of the Soviet government. It is planned to make major efforts to eliminate disproportions and shortcomings in the economy of the republic in short order. There will be a significant expansion of the power supply by the launching of operations at a number of power plants, including a large-capacity thermal power plant in Stalinabad, etc. As a result, the production of electric power in Tadzhikistan will increase by 140% during the seven years.

The building materials industry will develop at accelerated rates with the object of being in a position completely to satisfy the needs of the economy and the population for all types of mineral building materials within the next three or four years. Today about 80% of the cement used in Tadzhikistan is imported from other republics. During the Seven Year Plan, an existing plant in Stalinabad will be rebuilt and a large new one will be erected. The production of cement in the republic in 1965 will be 18 times as great as in 1958 and this will make possible a complete cessation of import into the republic, although consumption in 1965 will be four times as high. The production of wall materials will rise 240% in the present seven year plan, that of prefabricated reinforced concrete structures and products by 420%, and that of roofing slate by 160%. Moreover, the production of new types of construction materials (asbestos-cement pipe, porous clay filler for cement, relin, brizol, large rolled partition panels, etc.) will be organized.

It is planned to spend over a billion and a half rubles for geological prospecting out of the government budget. More than two hundred million rubles are to be used for prospecting for petroleum and gas with the aid of deep drilling. All this will make it possible to discover deposits of useful minerals and to render more precise the boundaries of existing ones, as well as to create the conditions for developing nonferrous metallurgy and the chemical industry in the republic. Thanks to the large capital investments to be made in 1959-1965, a substantial increase in the production of and an expansion in the processing of lead and zinc ores will occur and there will be similar developments in a number of other nonferrous and rare metals. During the same period, it is planned to build a nitrate fertilizer plant in the republic and the first unit of a large plant making sodium carbonate. A new branch of industry for Tadzhikistan, the chemical industry, will be established and this will eliminate the importation of sodium carbonate and nitrate fertilizers into Central Asia.

Reconstruction and specialization of existing metal-working enterprises in the republic will make it possible to increase output therein by 150% during the seven-year period. The proposed specialization of the Stalinabad machinery plants will be of considerable importance for the textile enterprises of Central Asia. After reconstruction, it will manufacture automatic looms and spare parts for textile equipment.

As a result of the completion of the second unit and the construction of the third unit of the Stalinabad Integrated Textile Mills, their capacity (in carding and weaving) will multiply almost fivefold and attain 100-105 million meters of fabrics per year. The production of silk fabrics will rise by 60% during the Seven Year Plan, that of leather footwear by 150%, that of hosiery by 190%, that of underwear by 130%. In 1965 it is planned to produce 2,600,000 square meters of rugs, and 3 million pieces of outer knitwear, a product that is currently not manufactured at all in the republic. The increased output of raw cotton will make possible a further expansion of the cotton ginning industry.

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* Chairman of the State Planning Commission of the Tadzhik SSR.

The gross production of the foodstuffs industry in 1965 will be 86% greater than 1958, and there will be a substantial increase in the production of meat, butter and vegetable oils, whole milk products, canned goods, flour and other foodstuffs. The increase in the production of consumer goods will occur both by the construction of new and the reconstruction, expansion, and technical re-equipment of existing enterprises, the introduction of new technology, the replacement and modernization of equipment.

During the Seven Year Plan, the gross production of industry will rise by more than 80%. Within this, the share of heavy industry will be considerably greater.

Major objectives have been placed before the republic's agriculture for the seven-year period. There is to be an annual increase in the production of raw cotton, which is to attain 560-600 thousand tons in 1965. It is planned to reach this goal by expanding existing acreages, and by substantially increasing the harvest yield of cotton. Of particular importance for the agriculture of our republic is the objective, advanced in the theses for the report of Comrade N. S. Khrushchev of introducing proper crop rotations within every single collective farm in the forthcoming Seven Year Plan. At the present time, cotton is planted over the same acreages for long terms of years in the majority of the cotton-growing collective and state farms of Tadzhikistan, without alternation with other crops, and this has a negative effect upon the yield. However, the introduction of proper crop rotations including cotton and alfalfa, will not only increase the yield of cotton but will also make for greater alfalfa acreages, and consequently will increase the supply of fodder for livestock.

It is planned to carry out important irrigation projects in Tadzhikistan in 1959-1965, which will make for a rise of 156,500 hectares of watered lands, including 25,000 hectares in the hungry steppe. There will also be an improvement in the irrigation system now in operation, and this will make for a more efficient utilization of the water resources, and an improvement in the supply of water to the lands now subjected to artificial flooding.

Much attention will be given in the new Seven Year Plan to the development of horticulture and viniculture, which are to come to occupy second place in the republic after cotton-growing. It is planned to plant 42 thousand hectares of fruit trees in 1959-1965. The gross production of fruits is to rise by approximately 80% from 1958 to 1965 and that of grapes approximately three-fold. The further expansion of the fodder supply for silk raising will make for a 60% increase in the production of cocoons from 1959 to 1965.

In the field of livestock-raising, during the same period, we envisage an increase in meat production of 110%, milk of 160%, and wool of 50%. Toward this end it is planned to develop the required supply of fodder by expanding the acreage under alfalfa, increasing corn acreage, that of root crops, barley and other fodder crops, and to bring about an increase in the yield thereof. There will also be an increase in the yield per unit of livestock by improving the breed, increasing the number of cows in the total, by better care for cattle, etc.

However, it should be noted, that in connection with the limited fodder resources, the production of meat and milk per head of population will in 1965 be lower in Tadzhikistan than in a number of other constituent republics.

It is planned to increase vegetable output so as to satisfy completely the needs of the population and that of the cannery industry. There will also be a rise in the production of potatoes, although the need for this item will continue to be met in part by imports in the future.

The next two years will see elimination of the scattered state of organization of automotive transport in the republic, and gross truck haulage will increase 85% during the seven-year period. It is necessary to provide normal transport communications in the Gorno-Badakhshan Autonomous Oblast and a number of other mountain districts of the republic.

In 1959-1965, 2,100,000 square meters of housing space, or 76,000 apartments, will be made available by means of centralized government funds. This is almost three times as great as in the preceding seven years, and almost 50% greater than the housing built during the preceding 30 years. Moreover, a portion of the homes will be built from non-centralized funds (funds possessed by individual enterprises, deductions from the profits of industry, etc.), and by individual home-builders. The supply of housing in the cities and workers' settlements of the republic will be increased by 80% at the end of this seven-year period. The total length of water piping in the cities and county seats will rise by 140% during the seven years, and that of sewage line by 520%. There will be a substantial expansion of the system of bath houses, laundries, hotels and other civic services. Stalinabad and Leninabad will be provided with gas. The provision of gas for Stalinabad (imported liquefied gas) began in 1958.

The volume of government capital investments in the construction of educational-public health-cultural and scientific institutions in 1959-1965 will exceed by 130% the investments in cultural upbuilding during the prior seven years.

The draft of the seven year plan for the development of the economy of the Tadzhik SSR has been elaborated with due consideration for further improvement in the geographic distribution of the forces of production and the need for deriving maximum economic effect from accelerated launching of productive capacities being built, and of rebuilt enterprises. As a result of fulfillment of the Seven Year Plan, the further specialization and complex development of economy of the republic, there will be substantial changes in the economic relationships between Tadzhikistan and the other economic regions. There will be a considerable increase in the deliveries of cotton fiber, vegetable oils, canned goods, dried and fresh fruits, grape wine, silk fabrics, rugs, nonferrous and rare metal concentrates, and various other types of industrial and agricultural products by the republic. Irrational haulage from other republics will be done away with, and there will be a pronounced reduction in the import of mineral fertilizers, cotton fabrics, knit goods, and furniture. At the same time, there will be an increase in the import into the republic of equipment, machinery, mechanisms, metals, lumber products, food grain, synthetic fibers, and a number of industrial goods and foodstuffs.

In connection with the discussion of the target figures for the development of the USSR economy in 1959-1965, we believe it desirable to introduce a number of proposals. Thus, the target figures envisage the building of a gas pipeline from Mubarek to Stalinabad. However, it is proposed to begin this only in 1965, and to complete it in 1967. However, in order to provide Southern Tadzhikistan with fuel, it will be necessary to haul in more than a million tons of coal from Karaganda in 1965, and the transportation costs (based on the cost of haulage) will be approximately one hundred thirty million rubles. The cost of building the Mubarek to Stalinabad gas pipeline is three hundred million

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P. Gritsenko:

Exploit the Natural Resources of the Economic Region More Thoroughly

The Kherson Economic Administrative Region unites the industries of the Kherson, Nikolayev and Crimea Oblasts. Hitherto, ship-building and the manufacture of machinery have been the major branches of industry in this national economic council. The metallurgical and chemical industries were considerably less advanced. Therefore, in the discussion at the enterprises of the theses of the report by Comrade N. S. Khrushchev, Target Figures for Development of the Economy of the USSR in 1959-1965, much attention was given to the more complete and rapid utilization of the natural resources of our economic district (iron ore, the limestones of the Crimea, so efficient a raw material for construction as reeds, etc.). The draft of the target figures presented to the State Planning Commission of the Ukrainian SSR envisages an extensive utilization of local natural raw materials in our economic district, although this will be within a more limited scope than had been envisaged by the local national economic council.

Whereas the industrial production of the region as a whole will increase 150%, there will be a sharp increase in the share of the metallurgical industry — approximately fivefold; the chemical industry — approximately 180%; the food industry (chiefly wine-making) — 300%; the building materials industry — 200%, etc.

In developing the long-range plan for progress in the industry of the Kherson Economic Administrative Region, much attention was given to the problem of the all-around utilization of its natural resources, the most important of which are the iron ores of one of the most important deposits in Europe, that of Kerch. The ore may be mined here from open cuts, and it is possible to use high-output bridge cranes and multiple-bucket excavators. A more intensive exploitation of this deposit will improve the iron ore balance in the Ukraine, and will make possible the production of a greater amount of basic slag (a by-product of steel-smelting) which is used as fertilizer in agriculture.

At the present time, the Giprostal Institute is developing the plans for the direction of the Kerch Voykov plant. The plan for the reconstruction of the Azovstal plant envisages increasing its pig iron, steel, and rolled products output by 150%, by using Kerch ores. Additional ore mines and dressing mills will be built. The capital investments going to expand the iron ore base and the construction of the iron and steel mill will total more than 30% of the total investments within this national economic council. In our opinion, these investments could be increased so as to bring substantially greater capacities into operation within the current seven year plan. It is also necessary to take decisions to provide the new enterprises with gas, water and electric power as soon as they go into operation. This is necessary if for no other reason than that funds for construction of a power plant are assigned primarily for the year 1964.

It should be noted that our scientists are giving substantial and valuable aid to the development of the iron ore and iron and steel industry of the Kherson Economic Region. Thus, a coordinating conference on problems of development of the Kerch iron and steel industry, organized by the USSR Academy of Sciences, under the supervision of I. P. Bardin, Vice-President of the Academy, was held at Kamysh-Burun in October. The decisions of this conference laid out the directions to be followed in improving the quality of the ore under various methods of concentration, in very specific fashion.

A second important problem in the mobilization of local natural resources is the all-around utilization of the wealth of salt of the Sivash and of certain lakes of the Crimea. This is a remarkable source of raw materials for various branches of industry: the chemical, the building material, etc. Many years of exploration of the Sivash have shown that it is capable of providing raw materials for several large-capacity chemical plants to manufacture magnesium oxide, bromine, and its derivatives, chlorine, soda, and other valuable products, and also for the production of building materials. The raw material resources of the Sivash are inexhaustible for all practical purposes as the loss thereof is constantly made good by salts deposited from the Sea of Azov.

The chemical industry of the Crimea, including the bromine plants, is no longer satisfying the rising needs of the economy for products of processing of the brines of lakes without outlet. However, nothing has yet been done to employ the brine of the Siwash, although this region has exceedingly favorable climatic conditions, as a result of which the concentration of brines here attained 12-15%, and even as much as 20% in August and September. Artificial evaporation of the water to yield concentrated salt brines would require about 232 billion tons of coal.

With the object of complex utilization of the mineral resources of the Sivash, the Crimean laboratory of the Government Institute of Applied Chemistry has carried out numerous scientific investigations relating to intensification of the production of bromine and the development of a new technology for the production of bromine and bromine salts. As a result, a technology has been suggested for yielding a brine magnesium oxide for the production of refractories and other types of light magnesia products. A more advanced technology for the production of magnesium chloride has been suggested. Methods of extracting sodium and magnesium sulphates from the brine have been investigated. A series of studies having to do with improvement in the technology of production has been completed. The methods developed by the laboratory will make it possible in the future to develop the production of building materials at the Sivash by the employment of magnesia cement (xylolite, fibrolite, biolite, etc.). The possible side-products include gypsum, which is widely employed in the economy.

It is also economically practical to build a plant for the manufacture of brine magnesium oxide (refractory power) in the area of the Sivash. At the present time, the possibilities of the Satkin Mine in the Urals, which has been meeting the requirements of the southern iron and steel industry for magnesite, are highly limited. The production of local magnesite of a higher quality than that of Satkin will free the iron and steel mills of the south from a long haul of this product.

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* Vice Chairman of the National Economic Council of the Kherson Economic Administrative Region.

The Kherson National Economic Council has planned complex utilization of all the raw materials of the Sivash and the lakes for 1959-1965. However, the State Planning Commission of the Ukrainian Soviet Socialist Republic did not accept all our proposals. In allocating resources for enlarging production departments, the State Planning Commission of the Ukrainian Soviet Socialist Republic does not deem it necessary to assign funds for reconstruction and expansion of the raw materials supply, although the existing hydro-technical installations have gone completely out of repair and are even now restraining increase in bromine output. Nor has an increase in the capacity of the electric power plants been envisaged. The plant is not to receive any money for reconstruction, and therefore it will only be able to double its output. However, if another ten million rubles in capital investment were made, it would be possible to treble output at this plant.

The Krasnoperekop bromine plants, within the purview of our National Economic Council, operates with raw material received from Lakes Staroye, Krasnoye and Kivatskoye. Their brine resources have been virtually exhausted. A draft of the objectives for the reconstruction of this plan has been approved, envisaging the use of the brines of the Sivash as its raw material. Its products will be employed to satisfy the needs of a number of branches of the national economy: the motion picture and photographic industries, the organic synthesis industry, the chemical and pharmaceutical industry, the printing trades, the building materials industry, etc. In 1965, production here is to be multiplied four-fold.

The State Planning Commission of the Ukraine, in approving the plan for development of this plant, as presented by the National Economic Council, is however planning an increase in magnesium and bromine oxide capacities for more distant periods than the National Economic Council envisaged. The appropriation of funds is projected in accordance therewith, and this of course cannot fail to affect the rates of utilization of the natural resources of the Sivash.

The major industrial enterprise designed to utilize brine is planned to be built in the vicinity of the Sivash. The National Economic Council has provided all the initial materials required so as to have the planning documents within the first quarter of 1959 and proceed to construction.

However, the State Planning Commission of the Ukrainian SSR has projected the appropriation of funds for this enterprise in such quantities and within such periods of time as will only make possible the construction of this plant after the conclusion of the present seven year period. This means that the raw material of the Sivash will not be utilized for yet a number of years to come.

In our opinion, it is necessary to re-examine this question and resolve it in such a fashion as to get the enterprise in operation within the present seven year plan, after which it should be possible to organize output of a variety of other products based on the processing of its wastes.

Reeds occupy a special place in the natural riches of our district. The gross crop of this plant (in the air dried condition) is 143,000 tons per year. Thus far it is only being used in very small quantities to produce reed pressboard at a plant in the town of Golaya Pristan. The construction of a plant to produce bleached cellulose (25,000 tons a year) and bindery paperboard (2,250 tons per year) was begun at Tsyurupinsk in 1958. It is scheduled to go into operation in 1962, although the delivery of equipment will be completed in 1960.

The National Economic Council has an experimental reed area in Tsyurupinsk, where methods of cultivation and reproduction of reeds are being developed. First experiments have shown that acclimatization and the cultivation of a domesticated version of the Arundo-Donaks dry valley reed, introduced from the Azerbaidzhan SSR, is of considerable economic interest. It is possible that the cellulose plant will in the future become a major integrated chemical enterprise, producing polymers and processing cellulose to fiber.

However, the problem of the provision of raw materials to the plant under construction has not yet been solved. In 1959, units of the integrated raw materials preparing department will begin to be built, yet thus far the Kiev design office of the State Planning Commission of the Ukrainian SSR has not even developed a model of a reed-harvesting machine.

Improved solution of problems of the cultivation and complex utilization of reeds requires, in the opinion of the National Economic Council, the founding of a branch of the Ukrainian Scientific Research Institute for the cellulose and paper industry in Tsyurupinsk employing the experimental reed development. This would make for a rational utilization of the reed growths in the Kherson Economic Region and in the Ukraine as a whole.

Our economic region has inexhaustible resources of the Inkerman limestones, which are widely known in our country, and are used for the production of wall blocks. Their strength ranges from 10 kg/cm^2 to 150 kg/cm^2. The output thereof is planned to be increased from 520 million conventional bricks in 1958 to 1,700,000,000 conventional bricks in 1965. Utilization of the Grigeorovsko-Ternovo supply of marls in Nikolayev Oblast will provide the base for the construction of a cement works.

In the future the Kherson National Economic Council will also strive for the most complete utilization of the natural resources of the region, so as to make a worthy contribution to the development of the economy of the country, and to the upbuilding of a Communist society.

Today, elaboration of problems of economic efficiency of capital investments in various branches of the economy of our economic administrative region are of particular importance for the enterprises and construction projects subordinate to the Kherson National Economic Council. The specialist personnel of various branches of industry, and particularly the economists, face important tasks in elaborating problems of improving the profitability of production and reducing costs of production. The exceptionally great importance of these problems requires that the status of the faculties of higher educational institutions in the field of economics and the republic-wide scientific research institutions in that field be involved in the solution of these problems.

In close collaboration with the science of economics, and by constant improvement in the functioning of the administration of the National Economic Council, the personnel of the enterprises and construction projects, the working population of the Kherson Economic Administrative District will achieve new triumphs in the realization of the program of great works involved in the seven year plan for the development of the economy of the USSR.

N. Goncharov:

Trends in the Economic Development of the North Kazakhstan Economic Region

Proceeding from the unforgettable principles of the Leninist policy in regard to nationalities, our Communist party, in elaborating the seven year plan for the economy of the USSR has deemed it necessary to proceed with a further all-round economic and cultural advancement of all the constituent republics. In connection therewith, it is envisaged to undertake a substantial expansion of non-ferrous metallurgy, power production, the manufacture of machinery, the chemical, petroleum, coal, cement, food, and light industries, and the creation of a large-scale iron and steel industry in the Kazakh SSR. It is planned to invest 116-119 billion rubles in the economy of the republic, which is 130% greater than the capital investments in the preceding seven years.

The importance of the role of the National Economic Council in carrying out this grandiose program for the development of the industry of the republic may be judged from the draft of the plan for the development of the industry of the North Kazakhstan and Kokchetav Oblasts from 1959 to 1965. The over-all increase in gross production in the North Kazakhstan Economic Administrative Region embracing the industry of these oblasts is to increase by approximately 170% in the seven years. Some branches of industry are to witness higher rates of growth. For example, electric power production is to be 14.4 times as high in 1965 as in 1958, the manufacture of power-producing machinery is to be three times as great, that of instruments — 350% greater, that of the radio engineering industry 460% greater, etc. The output of the building materials industry will increase in gross value by 430% by 1965, that of the butter and cheese industry by 110%, and that of the meat industry by 100%. The average annual rate of increase in gross industrial production is planned at 24.3%.

The launching of operations during the forthcoming seven year plan of a rather large power plant in the North Kazakhstan Oblast and of a somewhat smaller one in Kokchetav Oblast will make it possible to satisfy the needs of our growing industry and also to electrify all the state farms, the repair and equipment stations, the collective farms and the workers' settlements of these virgin-soil oblasts.

For 1959-1965, it is also planned to develop the manufacture of machinery at a rapid rate. This will be accomplished by rebuilding the existing and constructing new enterprises, equipping them with more modern machinery, by mechanization and automation, and by improvement of the technology of manufacture. During the seven year plan, a number of new plants in the instrument, radio parts, and rolling mill equipment industries will be begun and completed. It is planned to erect a new plant for the production of spare parts for agricultural machinery to meet the needs of agriculture. The enterprises under the National Economic Council will begin to produce trailer equipment, motors, various types of scales, presses for the processing of reeds, and various other products for the state and collective farms. Further improvement in the field of specialization and cooperation will occur in the plants manufacturing machinery. The machinery manufacturing industry will master and produce a number of new durable consumer goods.

Reconstruction and technical re-equipment of existing machinery-manufacturing enterprises, the construction of new enterprises and power plants, and the introduction of the latest in science and technology are expected to result in an increase of 290% in the output of these branches of industry in 1965 over the figure for 1958. The share of new plants in the total output of machinery will be 43% in 1965.

Proceeding from the need to guarantee a substantial rise in the living standard of the Soviet people in the years immediately ahead, a very great increase is planned in the output of consumer goods in the North Kazakhstan National Economic Council. Production of butter will almost double in 1965 over 1958, that of whole milk products will rise 180%, that of meat by 140%, and that of sausage by 110%. It is planned to develop a new branch of the food industry — fish farming and processing — in the next two years. It is also planned to expand the production of children's and special diet foodstuffs, to expand the output of the meat and dairy industries, in packaged form and improved quality.

Thirty new butter and cheese factories, two new urban dairies, a meat-packing plant, and a fish processing plant will be built during the seven years and brought into operation for the processing of agricultural products. The capacity of refrigerators and food enterprises will be doubled.

The following rise in output is envisaged for enterprises in light industry in 1959-1965: clothing 138%, leatherwear 139%, textiles 117%. Partial reconstruction, mechanization and automation of production processes, equipment with the latest and the most highly reproductive devices, are proposed for the purpose of substantially increasing output at plants now in operation in the light and food industries. In particular, it is planned that as early as 1959, thanks to the introduction of mass production lines at all the dairy factories now in operation under the North Kazakhstan National Economic Council, there will be a sharp increase in the production of butter, and at less cost. At the same time, there will be an increase in the productivity of labor and an improvement in the quality of production.

In connection with the measures outlined, it is necessary that the State Planning Commission of the USSR and the specialized plants manufacturing machinery for the food industry provide for the production of the most up-to-date equipment and means of automation for the foodstuffs and light industry in the years immediately ahead.

The theses of the report by Comrade N. S. Khrushchev speak of the need to develop the construction of enterprises to process butter, cheese, curds, and other foodstuffs by the efforts of the collective farms, the state farms, and the consumers' cooperatives themselves. In the North Kazakhstan Administrative District, a number of small butter dairies are located in the immediate vicinity of state farms and some of them even on the territory of the latter. In our opinion it would be economically desirable to transfer these enterprises to control by the state and collective farms.

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* Chairman of the North Kazakhstan National Economic Council.

A fundamental improvement in the housing conditions of the population is envisaged for the next seven years. In this regard, the plans of our National Economic Council alone provide for over 500,000 square meters of housing space to be placed in service during the next seven years. As far as capital construction is concerned the North Kazakhstan Economic Administrative Region contains no single enterprise that will not be rebuilt within this period, and no branch of industry in which new enterprises are not planned to be constructed.

The volume of construction work will rise 320% from 1958 to 1965. A considerable expansion is planned in the production of building materials in order to carry out the program of construction in our economic district. The target figures provide for an increase of 630% in the output of prefabricated reinforced concrete, 68% in brick output, 1680% in lime output from 1958 to 1965. Toward this end, it is proposed to reconstruct the existing enterprises and build plants to manufacture cement, reinforced concrete products, porous clay filler for cement, brick, lime, and other building materials.

Realization of the seven year plan will cause the share of the manufacture of machinery and the total volume of output in the North Kazakhstan Economic Administrative Region to rise from 36% in 1958 to 50% in 1965. The rapid development of the production of building materials will make it possible to increase their share in the total volume of gross production within the National Economic Council to 8%. In the course of seven years, new branches of industry will come into being in our economic district (ore and dolomites will be extracted, and spare parts for farm machinery will be manufactured). As a result of the economic development of the district, the number of works and office workers occupied in industry subordinate to the National Economic Council will rise by approximately 54.2% over 1958.

Even these by no means complete data on the development of the national economy in the North Kazakhstan Economic Administrative Region in the next seven years bear witness to the enormous significance of this program for the upbuilding of Communism as outlined in the target figures for the development of the national economy of the USSR from 1959-1965.

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rubles. The cost of building the gas pipeline will be completely recouped by savings merely in transport expenditures within less than two and one-half years. In this connection, it will be desirable to re-examine the dates for construction of a Mubarek to Stalinabad gas pipeline so as to begin it in 1961 and finish it not later than 1963.

It will be necessary, in 1964-1965, to begin the construction of a power plant capable of providing a dependable base for power production for the further expansion of the productive forces of Tadzhikistan in the future. We are completely in agreement with the idea that the development of power production in the next few years should primarily be based on the erection of thermal power plants utilizing cheap coals, natural gas and heavy oil. However, Tadzhikistan today does not possess, and it could hardly be expected to possess in the years immediately ahead, any significant resources of cheap fuel. At the same time, the republic has great potential resources of water power, in which it is second in the entire county (after the RSFSR). Therefore, of the various proposals advanced, the construction of the Nurek hydroelectric plant seems to be the most interesting. According to preliminary data, it will be one of the most powerful in the country. Its economic and technological indices are exceedingly favorable; the unit capital investment per kilowatt of capacity at the Nurek hydroelectric plants will be at the same level as large thermal power plants while the cost of electric power will be only one-fifth to one-sixth as great as that of those using natural gas fuel.

The erection of the Nurek hydroelectric plants, combined with the construction of irrigation systems in the Kashka-Darya Oblast of the Uzbek SSR where it is planned to irrigate about a million hectares of new lands, will yield a particularly great economy. The utilization of the electric power of the Nurek hydroelectric plant to irrigate lands in the Kashka-Darya Oblast will make for rational consumption of the excess power of the hydroelectric plants during the spring and summer months and will substantially reduce the cost of construction of the irrigation systems. It would be desirable for the State Planning Commission of the USSR, the USSR Ministry of Electric Power Plants, the USSR Ministry of Agriculture, and the state planning commissions of the Uzbek and Tadzhik republics to study this problem.

In order to increase the production of livestock products in the collective farms and state farms of the cotton-planting districts, where possibilities for expansion of fodder supplies are limited, it would be quite desirable to provide them with yeasts containing protein and vitamins. This could be accomplished by erecting, in the republic, a plant for the production of yeasts, based on the utilization of cotton stems ("Guza pai") as the raw material. "Guza pai" is today a primary household fuel for the rural population. Calculations show that if the yeast plant were to employ its wastes for the production of cellolignin briquettes, which would be provided to the rural populace, the collective and state farms could transmit 30% to 50% of the guza pai crop without any harm to the population. Thus, an adequate raw materials supply for the construction, in the republic, of a plant having a 10,000-ton annual capacity for manufacture of protein and vitamin yeasts is available. In our opinion, it is essential to include the construction of this enterprise in the Seven-Year Plan, as the purpose of that plan is to make use of ever greater hidden capacities and resources in the national economy so as to fulfill with honor the great objective set by the Communist Party of the Soviet Union before the Soviet people.

E. Veselovsky:

Factors for the Acceleration of the Economic Growth of the Republic

The theses of the report by Comrade N. S. Khrushchev, Target Figures for the Development of the National Economy in the USSR in 1959 to 1965, demonstrate in all their grandeur the magnificent objectives placed by the Central Committee of the Communist Party of the Soviet Union before the Soviet people with the object of assuring the further growth of the power of our great homeland and the well-being of its working people on the basis of the solution of these problems. These target figures convincingly demonstrate that the practical realization of the Leninist nationality policy will in the future make for the development of the fraternal constituent republics, and also the autonomous republics of the Russian Federation of which the Mordva ASSR is one. The example of the Mordva Economic Administrative Region provides a clear illustration of the creative results of this policy.

The Mordva ASSR occupies a territory of 27,000 square kilometers and has available an extensive railway network connecting Mordovia with the industry of Central Russia, the cities of Gorky, Ulyanovsk, Kuibyshev, Kazan, Penza, and also with the raw materials regions of the Urals and Kazakhstan. More than a million people live in the republic, although the urban population is only 13.4% of the total.

The volume of industrial production here was more than 20 times as large in 1956 as it had been in 1913. However, industry has, in the postwar years, developed quite inadequately, when compared with the adjacent oblasts and autonomous republics, as may be seen from the following figures, demonstrating the growth of industrial production (in percentage of 1940):

	1945	1950	1955	1956
RSFSR (as a whole)	106	175	314	345
Penza Oblast	114	152	314	342
Ulyanovsk Oblast	119	250	406	432
Chuvash ASSR	141	228	427	456
Mari ASSR	192	268	500	525
Udmurt ASSR	231	219	427	462
Tatar ASSR	219	345	747	788
Mordva ASSR	71	119	182	186

The lag of the Mordva ASSR was due to the narrow departmental approach to the development of various branches of industry in the republic, and also to the fact that there was a time when the State Planning Commission of the USSR did not give adequate attention to the all-around development of industry and power production in Mordovia. Thus, for example, in the last seven years alone, considerable funds went to the installation of 17 boiler rooms in factories. If these capital investments had gone to expanding the Thaelmann heat and power plant, this would have made possible an increase in the capacity of this plant. The absence of an adequate supply of power and the lag in the production of building materials created great difficulties in the republic, and this compelled the USSR ministries to build enterprises that had been planned for Mordovia in other portions of the country.

Only the establishment of a Mordovian Economic Administrative Region made it possible more completely and in more rational fashion to utilize local possibilities and to proceed to an integrated development of industry. The seven year plan of our District is an integrated plan for the development of the industry of Mordovia, and envisages a 390% growth in the gross production over 1959. In this connection it is to be observed that the volume of gross production in 1959 will already be 36% more than in 1958. And in 1965 it is planned to produce as much as was produced in the preceding 11 years combined including 1958. Toward this end the Mordovian National Economic Council plans investment in the development of industry of more than 4.1 billion rubles or 5.8 times as much as had been invested during the preceding seven years.

Certain prerequisites have been established for rapid development of the economy of Mordovia. Thus after the organization of the National Economic Council, the erection of the number two heat-and-power plant, has proceeded at a forced pace. During the last 16 months, as much capital investment was put into this plant as had been the case during the preceding 4 1/2 years combined. The first turbine was started in November 1958, and the second turbine is to go into operation the second quarter of 1959. The development of the number two plant is planned to proceed somewhat more rapidly than growth in industrial production. The volume of electric power to be produced in 1959 will more than double over 1958 and in 1965 it is to be 12.3 times as great. Production of thermal energy will rise 140 times.

The first steps toward the creation of a power grid for Mordovia were taken in 1958. The erection of the first 62 kilometers of a 110-kilovolt power transmission line, connecting the number two heat-and-power plants with the town and district electric power plants at the Alekseyev Cement Works is being completed. In 1959-1960 a high voltage transmission line will be built from Saransk to Ruzayevka, and, in connection with the electrification of the Moscow-Kuibyshev-Irkutsk Railway, a power transmission line will be built from Arzamas to Ruzayevka. In 1960, it is planned to link the Mordovian power system to the general power grid of the European portion of the USSR. Thus, the development of the power industry in Mordovia will create all the conditions for a more rapid upsurge in industry. In 1964, it is planned to complete electrification of agriculture in Mordovia, and this will increase its profitability and considerably reduce the outlay of labor required to produce agricultural goods.

From the first days of its operation, the Mordovian National Economic Council has concerned itself with the development of the building materials industry. Toward this end, a study was made of the raw material resources of Mordovia. Geologists were successful in finding thick deposits of quartz sand, and a major deposit of sandstone near Saransk. Major capital investments are going into the development of the building materials industry during the first two years of the seven year plan. Thus in 1959 the construction of the large Alexeyev cement plant will be completed. This plant will produce high grade cement. The first two production lines at the Alexeyev roofing slate plant will go into operation, and the output capacity of this plant is scheduled to be 124 million conventional plates per year. The production of asbestos-cement piping is scheduled to begin in 1960. An integrated plant for the manufacture of heat-insulating materials is being erected at Saransk, as is a large plant manufacturing silicate box. 1959 will see the start of construction of a new plant to manufacture reinforced concrete assemblies. In addition, there will be an increase in the capacity of the Saransk Brick Works and of a number of enterprises manufacturing other building materials (diatomaceous brick, porous clay filler blocks, plywood, etc.). All this will make possible the provision of the required materials to the construction industry and will facilitate the further development of industry in the Mordva ASSR.

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* Chairman of National Economic Council of Mordva ASSR.

Examination of this development in the State Planning Commission of the USSR and the State Planning Commission of the RSFSR, led to a decision substantially to expand the Saransk electric light bulb plant, and to organize large-scale manufacture of fluorescent lights at this plant, inasmuch as these are more economical in their consumption of electricity. This production will make for an economy of over 400 million rubles a year. In Mordovia it is planned to develop the electrical engineering industry as well. Construction of the Saransk cable plant, where the production of ceramic-covered wire will also be organized, is coming to an end. Polyethylene and various plastics will be widely used in the manufacture of electric cable here. This will make it possible to save tens of thousands of tons of lead, previously employed for cable casings. There will also be an expansion in the production of electrical engineering items having to do with the new technology.

One of the major objectives of the seven year plan for the development of the Mordva Economic Administrative Region is the founding of the chemical industry in Mordovia. Today all the economic prerequisites for the building of the Saransk Integrated Rubber Factory, an artificial fiber plant, an integrated plant for the production of silk skirt fabrics, and others already exist. In 1965, the volume of production produced by enterprises in the chemicals industry will provide a substantial portion of the total volume of the gross production of the Mordva National Economic Council.

The needs of the adjacent economic regions are given due consideration in the development of the foundations of a machinery manufacturing industry in our region. For example, the development of a chemicals industry, with a high degree of use of petroleum as a raw material, will result in an increase in the need for chemical equipment in the Tatar ASSR, the Bashkir ASSR, and Kuibyshev Oblast. In this connection, it is planned to build two chemical machinery enterprises in Ruzayevka.

In order to reduce unproductive expenditures upon the haulage of chassis for the GAZ-51 truck from Gorky to Odessa, and the majority of auto dump trucks from Odessa to districts of the RSFSR, it is decided to undertake assembly of these machines within our republic. This will improve the industrial ties between the Gorky and Mordva economic regions, and will make it possible later on to free the plants in the Gorky National Economic Council from the manufacture of special bodies on the GAZ-51 chassis, because their manufacture will be shifted to enterprises under the Mordva National Economic Council.

The seven year plan also envisages the construction of a large capacity, specialized plant for the production of steel and non-ferrous castings, and also castings of malleable and grey iron. All these types of metal are needed for the automotive industries of Gorky, Moscow, and Ulyanovsk.

The seven-year plan for the development of the Mordva Economic Region is intimately coordinated with the development of agriculture in the Mordva ASSR. A large capacity sugar refinery is being built at Romodan to process 15,000 centners of sugar beets per day. When it goes into operation in 1960 it will cause a sharp reduction in expenditures for the transportation of beets from local collective and state farms. Two alcohol plants will be rebuilt as meat-packing plants, and this will make it possible, starting in 1960, to process on the spot all cattle purchased in Mordovia. The Saransk cannery which produces meat, dairy and vegetable preserves will be expanded. The district dairies will be rebuilt, and two new dairies are to be constructed. All this will make it possible to expand the production of the food industry by 55%.

A large amount of northern hemp is grown in the Mordva ASSR. It is planned to found hemp enterprises with mechanized retting, and this will increase the yield of high quality fiber and substantially reduce expenditure of labor. There will also be an expansion of the Saransk Integrated Hemp Plant, where production of rope by the processing of long staple fiber is to be organized. After the integrated rayon plant is started, the volume of production of light industry will have more than doubled and will constitute about one billion rubles per year.

In 1959-1965, more than 450 thousand square meters of housing space will be built by the National Economic Council alone. This is approximately 4.8 times as much as was built during the preceding seven years. Despite the fact that each new apartment will be designed for single-family occupancy, the cost of housing space therein will be reduced by about 18 to 20%, thanks to the employment of standard designs and efficient methods of construction.

In connection with the building of the Saratov-Saransk-Gorky gas pipeline, the cities of Saransk and Ruzayevka, the county seat of Chamzinka, and the workers' settlement of Komsomolsky will receive gas. By 1960, the number one heat and power plant at Saransk, the cement mill at Alekseyevsk, the Saransk light bulb plants and brick works, will be converted to gas fuel, and this will make possible a saving of up to 420 thousand tons of long-haul coal per year.

The territorial building organizations under the National Economic Council will engage in new construction. Each of them has its own long-range plan which makes it possible to provide prompt preparation for the erection of any given project. The seven year plan of our district envisages a 70% increase in the productivity of construction workers. It is planned to attain this by means of further expansion of the use of prefabrication in construction, extensive introduction of pre-assembled reinforced concrete (and, particularly, progressive fabrications thereof), and also by means of all-around mechanization. For example, it is planned to bring the use of preassembled fabrications in housing construction up to 72% of the total and in industry up to 78% of the total within the Mordva National Economic Council. Moreover, the National Economic Council has decided to reorganize the construction organizations on the basis of a greater specialization.

In realizing the plan for capital construction, it is planned to concentrate the efforts of the building and construction organ zations on those enterprises which are ready to be started, so th the volume of unfinished construction is tobe reduced from 69% of the total of construction underway in 1958 to 38% in 1965.

As a result of the carrying out of this seven year plan for the development of the Mordva Economic Administrative District, the consumption of electric power in the Mordva ASSR will rise 5.5 times per head of population and production will rise approximately four times.

(Continued on Page 66)

A. Teryayeva:

The Upsurge in Socialized Production and Improvement in the Forms of Payment for Labor in the Collective Farms

As pointed out in the theses of the report of Comrade N.S. Khrushchev at the Twentieth Congress of the Communist Party of the Soviet Union, the grandiose transformations to take place in our country will make it possible to advance to a new and most important period of development — the period of all-out upbuilding of a Communist society. The December 1958 plenary meeting of the Central Committee of the Communist Party of the Soviet Union posed a number of most important problems before our socialist agriculture and, specifically, before the collective farms, in their new state of development.

With the system of social economic transformations of society being carried out in the period of upbuilding of Communism, the attainment of high productivity of labor combined with a reduced working day, a change in the nature of labor itself in the process of economic and cultural development, and the overcoming on the basis thereof of the existing difference between physical and mental labor, as well as the social and economic differences between the town and country, will have decisive importance. Toward this end, it is necessary during the forthcoming seven year plan, to improve in every possible way the methods of socialist distribution in accordance with labor contributed, and the forms thereof in commodities and money. Problems of further improvement in accounting of labor, and the social evaluation thereof, of material incentives and of payment of labor in the collective farms, attain particular importance.

Participation in social labor, and satisfaction of the personal needs of a considerable portion of the population of the USSR are intimately related to the development of the socialized economy, and the methods of distribution of income in the collective farms. The level of development of the socialized economy predetermines the fate of the individual private business of the collective farmer, and its role in the satisfaction of the collective farmer's needs. Today, the income gained from sale on the market of agricultural produce, and chiefly of production livestock raising, fruits and vegetables, represents a significant portion of the monetary income of the collective farm family. The level of development of the socialized business determines fundamentally the relationship between the income in kind and in money gained by the collective farmers from the socialized and private portions of their economies. The greater the absolute income paid for labor-day units, the smaller, absolutely and relatively, as a general rule, is the income from the private plot. Thus, in the cotton districts of Central Asia, where the total income of the collective farmer from the socialized portion of the economy is 50% higher, and his monetary income is 150% higher than the average for the USSR, the share of income from the private plot is lowest of all. The opposite situation is observed in, for example, the collective farms of the Lithuanian and Belorussian constituent republics.

Major successes in the further reinforcement of the collective farm system, attained in the period since the September 1953 plenary meeting of the Central Committee of the Communist Party of the Soviet Union, have made for a significant increase in the payments in money and kind to collective farmers for labor-day units and have thus made it possible to increase their living standard. The following percentage data will provide an idea of the dynamics of the average level of payment of collective farmers in the USSR.

	1952	1954	1956
Money Paid Out			
Per Labor-Day Unit	100	173	270
Per Man-Day	100	180	330
Total Payments, as Expressed in Money			
Per Labor-Day Unit	—	100	139
Per Man-Day	—	100	149.5

These data make it clear that the substantial increase in payments to labor in the collective farms during the period we are considering resulted chiefly from the increase in the monetary payment for the labor-day unit. In collective farms where monetary payment is high, payments in kind represent less than 30-35% of the total distributed, and by and large, represent merely what the farm family can consume. In the new stage of development of collective farm production, with the socialized sector providing a high degree of production for the market, monetary payment will thus become a general index and standard for measuring the living standard of the collective farm family.

Thanks to the all-sided organizing activity of the party and the government to strengthen the collective farm system, the real incomes of the peasants, as calculated per individual working person, more than doubled from 1940 to 1958. Simultaneous with the improvement in the material well-being of the collective farmers, major qualitative changes are occurring in collective farm production. The reorganization of the Machine and Tractor Stations, the new system of purchases and prices, making possible a greater material incentive to the collective farmers in improving socialized production, have hastened the advance to Communism. As the economies of the collective farms become strong, as the character of collective farm property changes, the nature of labor in the countryside undergoes a continuous change, as do the forms of accounting of labor and of distribution in the collective farms, which ever more closely approximate, in form and content, the corresponding forms in government-owned enterprises. The real process of approximating forms of accounting of labor and payment for labor in the collective farms to those in state-owned enterprises is manifested in the more important role played by commodity and monetary relationships between the government and the collective farms on the one hand, and between the collective farms and the collective farm members on the other, and by the dying out of the labor-day unit as the measure of labor and the tool for distribution in accordance with labor contributed in the collective farms, and by a reinforcement of the principle of guaranteed wages in the development of the monetary payment for the labor of the collective farm.

If the payment in kind to collective farmers in labor-day units be evaluated in money, it represented 53% of the total payments (in kind and in money) in 1954, and 43% of the total in 1957. As compared to 1950, the payment of money per labor-day unit increased almost three times by 1958, and four times when calculated per actual days worked. The stable and relatively high monetary payment for labor-day units in collective farms with well-developed and intensive socialized economies make it possible for a number of collective farms in various districts of the country to convert from measurement of labor in labor-day units to a monetary pay scale for quotas of work done or for actual calendar days of work, accompanied by regular payment of money once a month or once a quarter, as may be desired by the collective farmers.

A decisive factor in the transition from evaluation of labor in labor-day units to a monetary scale is the increase in monetary income and the stability of the economy of the business, large-scale collective farms, and a high level of socialized production of labor. All this not only makes possible but necessary a fundamental change in methods of accounting and social evaluation of the standard of labor, and the payment therefor in the collective farms.

In 1957, an average of 16 rubles and more was paid out in a substantial number of collective farms for a single calendar day of work, and this figure approximates the daily wage of workers of average skill in the state-owned farms.

Payments in 1956-1957 in the collective farms of Krasnodar and Stavropol territories, Rostov Oblast, virgin and idle soil pioneering districts in Altay territory, and Novosibirskaya and Kemerovo Oblasts, the cotton districts and certain others reached the level of average pay for state farm workers in 1956-1957, as is evident from the following data (in rubles and kopeks):

	Daily Wage of State Farm Worker in 1957	Daily Payment of Collective Farmer in 1956-1957
Krasnodar Territory	21-30	18-26
Stavropol Territory	21-30	22-00
Altay Territory	18-40	22-40
Novosibirsk Oblast	18-00	15-40
Maritime Territory	22-20	18-75
Uzbek SSR	19-00	18-60
Kazakh SSR	22-00	16-20

However, the average level of payment for the labor of the collective farmer, particularly in money, is considerably lower when calculated per calendar day worked, in many collective farms. Therefore, the farmer's private plot remains an important source of income for the family budget in these areas. The spread in the payment of labor when calculated per collective farm member capable of working would be even greater if we considered that on the average, a worker in a government enterprise for the USSR as a whole works more than 50% more days per year than does the collective farm member capable of working. It must be observed that in a number of districts and even republics, the average annual level of occupation in the social economy of the collective farms is substantially lower than this average, as is testified to by the following data on the average annual number of man-days worked by physically able collective farmers in the socialized portion of the business,in various economic districts of the USSR in 1956-1957.* (See A below)

At the present time, the physically able collective farmer is occupied in the socialized economy little more than 200 working days a year, the collective farm woman 150 working days, and the average duration of a working day is between seven and eight hours. In some territories and oblasts, the average annual time spent by the collective farmers in agricultural production is even lower. Moreover, the increase in production and in income, all other conditions being equal, depends upon the degree to which the worker is engaged in the production of goods the year around. More complete utilization of the labor force and increase in the output of goods, calculated per worker occupied in production, is a major hidden reserve for growth in production, productivity, and the payment of labor in the collective farm. Thus, the problems of increase in labor productivity, reduction in cost, and increase in the profitability of collective farm production emerge, in the present seven year plan, as vital problems before the upbuilding of the collective farms, the successful solution of which will govern the further upsurge of the material well being of the collective farmers. During the seven years it is planned to increase the productivity of labor in the collective farms by approximately 100%, the object being that each collective and state farm will not only assure the production of the greatest possible amount of produce from the land under its control but will conduct its economy in business-like fashion, with the most intelligent utilization of all the possibilities available, and the adherence to the strictest possible economy.

The rates of growth, and the relationship of the levels of labor productivity and payment therefor, accumulation, and consumption (with growth in labor productivity running ahead of the others by a definite ratio), will in our opinion, differ from one district of the country to another and will also differ among various groups of collective farms, inasmuch as, for a variety of reasons, due among other things to the fact that the action of the law of value has been ignored in collective farm production, there has developed an economically unjustified regional and branchwise differentiation in the payment of labor of the collective farmers, as testified to by the following data on the payment of labor, in monetary figures, as calculated per man-day, these being average figures for the respective oblasts, territories, and republics in 1956-1957 (see B below).

The result of this differentiation in the payment of labor means, for example, that in the collective farms of the central non-black earth region and the central black earth region, of the Middle and Upper Volga, the monetary income for a collective farm family is only 1/3 to 1/4 as high as in the cotton growing districts and only 2/3 as high as the average for the USSR. The lowest payment of labor per man day worked is found in the Ulyanovsk, Ryazan, Smolensk, and Perm Oblasts, and the Chuvash and Tatar autonomous republics. However, the level of payment for labor in many cases does not correspond to the level of labor productivity, as testified to by the following data on the productivity and payment of labor in collective farms as per cent of the average for the USSR (see C below).

Improvement in the systems of organization and payment to labor, and in social security for the collective farmers, the raising of backward districts and enterprises to the level of more advanced ones, accompanied by an all-around utilization of commodity and money relationships, must lead to a reduction in the sharp differences in income. This will be facilitated by the ever greater development of public catering, of housing and cultural and service construction, of children's institutions, of socialized means of transportation, etc. In turn, as a result of the development in the collective farms of socially organized forms of satisfying the

Table Ⓐ

Group No.	Man-days worked by adult collective farmers capable of working, as % of:		
	Group 4	USSR average	
1	71	79	Kursk, Lipetsk Oblasts; Tuva Autonomous Oblast; Mordva and Chuvash Autonomous Republics; Lithuanian, Georgian and Moldavian constituent republics.
2	81	90	Belgorod, Bryansk, Voronezh, Penza, Tambov and Sakhalin Oblasts; Dagestan and Mari Autonomous Republics, Azerbaijan, Armenian and Belorussian constituent republics.
3	91	101	Astrakhan, Vladimir, Gorky, Kuibyshev, Orel and Ryazan Oblasts; Stavropol Krai; Bashkir, North Ossetian, Tatar and Yakut Autonomous Republics; Kirgiz, Tadzhik and Ukrainian constituent republics.
4	100	111	Kaluga, Kostroma, Kemerovo, Rostov, Perm, Saratov, Stalingrad, Tula and Ulyanovsk Oblasts; Altay, Krasnodar, Maritime, and Khabarovsk Krais; Buriat ASSR.
5	109	122	Amur, Kurgan, Moscow, Novgorod, Orenburg, Novosibirsk, Irkutsk, Tomsk and Chita Oblasts; Krasnoyarsk Krai; Karelian, Komi and Udmurt Autonomous Republics; Kazakh, Uzbek, Latvian and Estonian constituent republics.
6	119	132	Ivanovo, Kirov, Leningrad, Omsk, Sverdlovsk, Smolensk, Tyumen, Chelyabinsk and Yaroslavl Oblasts; Kabardino-Balkarian ASSR.
7	131	195	Arkhangelsk, Vologda, Kaliningrad and Kalinin Oblasts; Checheno-Ingush ASSR, Turkmenian SSR.

* Data oblast by oblast, only for the RSFSR.

Table Ⓑ

Group No.	Payment for labor (per man-day worked), as % of:		
	Group 4	USSR average	
1	50	45	Ulyanovsk Oblast; Bashkir and Tatar Autonomous Republics.
2	67	61	Arkhangelsk, Vologda, Vladimir, Bryansk, Kaluga, Kirov, Perm, Penza, Orel, Novgorod, Smolensk, Ryazan, Lipetsk, and Tambov Oblasts; Komi, Mari, Mordva and Chuvash Autonomous Republics; Lithuanian SSR.
3	83	76	Gorky, Kaliningrad, Kalinin, Kostroma, Kuybyshev, Ivanovo, Pskov, Kurgan, Tula, Tyumen, Sverdlovsk Oblasts; Kabardino-Balkarian ASSR and Belorussian SSR.
4	100	91	Belgorod, Kursk, Leningrad, Omsk, Saratov, Stalingrad, Orenburg, and Tyumen Oblasts; Khabarovsk Krai; Buriat, North Ossetian and Udmurt Autonomous Oblasts; Azerbaijan, Latvian and Ukrainian Republics.
5	117	106	Amur, Voronezh, Irkutsk, Moscow and Chelyabinsk Oblasts; Krasnoyarsk Krai, Tuva Autonomous Oblast; Dagestan and Checheno-Ingush Autonomous Republics; Estonian SSR.
6	133	121	Kamensk, Novosibirsk, and Chita Oblasts; Yakut ASSR; Armenian, Georgian, Moldavian, Kazakh, Kirgiz and Tadjik constituent republics.
7	154	140	Astrakhan, Rostov, and Sakhalin Oblasts; Altai, Krasnodar, Maritime and Stavropol Krais; Turkmenian and Uzbek constituent republics.

Table Ⓒ

	Labor Productivity (1954-1955 average)*	Labor Payment Per Man-Day (average 1954-1956)
USSR	100.0	100.0
RSFSR	103.4	85.5
Central Non-Black Earth Zone	72.0	60.3
Central Black Earth Zone	109.0	62.0
Volga Region	103.0	71.0
North Caucasus	151.2	133.5
of which, Krasnodar territory	171.0	127.0
West Siberia	149.0	143.0
of which, Novosibirsk oblast	136.0	90.1
Districts of the North	80.3	49.0
Districts of the West†	69.3	74.2
Kazakhstan and Central Asia	111.4	130.0
including:		
Kazakh SSR	135.0	148.0
Uzbek SSR	95.0	138.0
Trans-Caucasia	84.6	111.3

* Gross production in prices of 1951 per man-day.

† Latvia and Estonia.

every-day and cultural needs of the people, along with growth in and stability in the individual payments of labor, an enormous amount of labor, currently expended in the private farm, which is low in productivity, will be liberated. This will make possible a further increase in the productivity of socialized labor.

The development of various socially organized forms of satisfying the living standard needs, alongside an increase in individual payments for labor, is of particular importance to the collective farm woman, and for increasing the skills of female personnel. Mothers of large families often have no chance whatever to participate in the socialized aspects of labor and social life, and even less to increase their skills. Improvement in the utilization of labor and increase in the skill of female labor is, however, intimately related with the solution of problems of household services to the collective farm woman by such means as day nurseries, kindergartens, boarding schools, public catering, and organized delivery by collective farm-owned transport facilities to the place of work and return.

In view of the seasonal nature of agricultural production, an increase in the degree to which collective farmers are engaged in the socialized portion of the economy depends to a considerable degree upon the level of its development and the nature of its specialization. Utilization of unoccupied labor during the fall and winter season in various types of subsidiary enterprises is also of considerable significance. Therefore the planned construction, by the means available to the collective farm, the state farm, and the consumer cooperatives, of enterprises for the baking of bread, the manufacture of sausage and semi-processed meat products, of butter, cheese, curds, vegetable and fruit preserves, starch, and other foodstuffs will be of significance. So will the development of construction of inter-collective farm enterprises for the processing and storage of agricultural produce, and the joint establishment of industrial, construction, and other businesses, as well as the building of electric power plants, irrigation and railway systems, cultural and service institutions, etc. Moreover, in all collective farms, the institution of guaranteed payment of labor on a definite stable basis, and the introduction of new and progressive forms of distribution of income and accounting of labor is of the very greatest importance to increase the activity of people at work and the productivity of the collective farmers' labor. Therefore it is necessary to define the economic foundations and the development of the various forms of guaranteed payment for the collective farmer's labor.

Thus, year-round provision of advance payments are leading directly to guaranteed payment for the labor-day unit fixed in the production plan of the collective farm, and a stable and adequate level of monetary payment for the labor-day unit leads in turn to direct monetary payment based on a wage scale in rubles, and also to measurement of labor in general by the standard applicable to the entire national economy — money and working time.

The provision of a guaranteed monetary payment for the labor of the collective farmers, and transition to the monetary wage scale requires creation of special funds for distribution and special forms of credit. Moreover, transition to a monetary wage scale and the establishment of a guaranteed monetary payment does not exclude the possibility that the collective farmers will receive products of agriculture and industry in definite quantities from the socialized economy and will thus have less reason to produce these products in their own private plots.

The monetary wage scale itself may be established with due consideration for the fact that a definite and also guaranteed portion of the wage will be paid out in kind. Toward this end, the collective farms converting to monetary calculations, have established a definite percentage (usually 25-30%) of the value of the produce issued or sold, in the general monetary evaluation or earnings of the collective farmer. However, there is a fundamental change in the nature of supply of these products, as this will increasingly take on the form of commodities.

In calculating monetary settlements for various types of work per unit production in livestock-raising collective farms, the basis usually taken is the existing scale of payment in labor-day units and wage scales. However, as conversion occurs from measurement in labor-day units to a firm monetary payment, the question has arisen as to the need for re-examining work quotas, and also for improving methods of social evaluation of the quality of labor and for monitoring the measurement of labor in accordance with the development of technology and the economics of the collective farms.

The existing wage scales and rates have already become out-dated and do not reflect the actual differentiation in skills presently obtained. For example, the nine-grade wage scale for field work adopted in 1948 and based upon a one to five extreme differentiation in pay reflects the multiplicity of skills and evaluations of the quality of labor characteristic of that stage in the development of large scale collective farm production, in which a fairly high percentage of work was still done by hand. The rapid technical progress and change in the material and technical basis of all branches of agriculture is leading to a significant change in the level and character of skill of collective farm personnel. In agriculture, as in industry, as all-around mechanization is introduced, there is a leveling out of differences in skills, as between the basic and the auxiliary jobs, etc. There is an elimination in the pronounced differentiation related to one-sided specialization in the performance of individual operations or jobs, requiring a considerable level of manual skill. At the same time, the control of machinery and biological processes in agriculture and livestock raising requires personnel having a high technical and cultural level. The differences in the laboriousness and harmfulness of various types of labor also tend to level out with the introduction of the new technology. All this also requires fundamentally new solutions of problems of rate setting, the organization of piece work payments to labor, quota systems and accounting.

Changes in the evaluation of and payments to labor, reflecting real objective processes, must consequently find concrete expression in reduction in the gradations in payments to labor as provided by rate scales, that is to say primarily in a reduction in the number of grades in the scale and the differentiation in the payment of labor to the highest and lowest grades as well as in the payment of labor to workers in various branches of agriculture. Such rates in the nine-grade scale for field work, as one-half to three-quarters of a labor-day unit for a full day's work quota, presently set for work not requiring any great degree of physical intensity or skill, on the basis that this is usually done by juveniles and the aged, has outlived itself and is no longer used in practice. Data on the Avangard, flax growing collective farm of Chkalov District, where we conducted a survey of time work in hours in the field brigades, show that in the course of the entire year, the actual scales paid for hand and horse-powered work in labor-day units did not come to less than one labor-day unit, or in other words the ratio of extremes in payment actually came to 1:2. The ratio is 1:2. Many collective farms have already long since converted to a five-grade scale in which the ratio of pay between the highest and lowest levels is 1:2.5 or 1:2.

The work quotas and standards for evaluation of work done in labor-day units have applied in the machine and tractor stations for tractor operators and certain other categories, remain unchanged in most collective farms, with the result that there are significant shortcomings in payment for this labor. In this connection, a pressing need is currently felt for unification of the standards of work required and of wage scales so that the work of personnel in field brigades and the work of machine operators be paid on the basis of a unified wage scale for all categories of workers, the more highly skilled work of machine operators being paid for at a high rate.

Improvement in the methods of payment of scales in various fields of agriculture is also required. At the present time, an economically unjustified and sharp differentiation in payment for a working day in different branches of agriculture and for different crops has grown up in the collective farms. Here, for example, is the way in which labor expended upon different kinds of crops was paid for in 1957 in the Avangard collective farm.

	Flax	Grains	Potatoes
Total (thousand rubles)	740.4	302.2	143.5
Including:			
Basic Wage	437.5	284.0	141.0
Supplementary Payments	302.9	18.2	2.5
Rubles Earned per Labor-Day Unit in Growing the Given Crop	16.0	10.0	9.6

There is approximately the same differentiation in the payment of labor for collective farmers engaged in livestock raising.

A large-scale conversion to a guaranteed money payment for labor, conditioned by the present day level of development of the economy of the collective farm, dictates a fundamentally new approach to the establishment of funds for payment of labor in the collective farm. Such funds must be derived from a definite and fixed share of the gross income, and not from the residual produce and money at the end of the year. In view of the sharp differences that already exist in the economies of the collective farms, the level and forms of guaranteed payment of labor and the scale of deductions and gross income cannot be identical, although the approach to guaranteed payment for labor is an immediate problem facing all collective farms: those that are economically strong, the average, and the weak ones. Recognition of the principle of guaranteed payment to the collective farmers for their labor means that deductions into the fund for guaranteed payment of labor, as a specific percentage of gross production and current monetary income, must be carried out the year round, and the establishment of this fund must be obligatory, and it must be reserved for use for this purpose alone. This fund is a fund for providing a minimum wage, and at the end of the year it is subject to correction only in the direction of increasing it, in accordance with the results of the productive activities of the collective farm, the brigade, the producing unit, or the team. Funds for pensions, for payment of sick leave, for regular vacations, and the like must be established in the same manner.

The planned creation of a guaranteed social fund for payment to labor, and funds for social assistance, must be based on a correct utilization of gross and net income, with due consideration of the value and profitability of output. This means that new capital construction, and increase in the fixed capital in the collective farms, must be based upon real accumulation, on the condition that the expended means of production be replaced, and that the necessary level of payment of labor be assured.

Of vast importance to the further development of collective farm production is not only the establishment of a definite guaranteed level of payments for the collective farmer's labor, but a differentiation of this level (regional and within each enterprise) in accordance with the economic results of the work done, that is the quality and quantity of the produce and the level of cost thereof.

At the present time, there is an ever-increasing relationship in the collective farms between the distribution of income, the productivity of labor, and the scope and profitability of production. In livestock raising for marketable produce, where labor is more individual, a system of basic and supplementary piece and bonus payments per unit of output, per liter of milk milked, per 10 eggs, kilogram of meat, etc.

A different situation pertains in the crop raising. Here, too, practical experience gained in the making of supplementary payments for labor has demonstrated the possibility of using a piece work plus bonus system per unit of output. This type of payment was instituted by some collective farms first for crops requiring cultivation, and then for all crops raised by field brigades or teams, The collective farms have successfully combined year-round payment of advances per labor-day units earned by the collective farmers during the year, with a payment differentiated from brigade to brigade at the end of the year in accordance with the final results of the work done by the given producing unit.

The experience gained in the utilization of piece plus bonus payment in agriculture under conditions in which the labor-day unit was employed, is capable of being utilized to a considerable degree upon substitution of a monetary wage scale for the latter. In agriculture, a difference between the real and the scheduled payments for labor is inevitable. inasmuch as the scheduled estimates for payment per unit of production is based upon the carrying out of definite production processes in the course of the year. This difference, as well as the fluctuations in harvest, give rise to the difference between the quantity of earnings obtained by members of the brigade or team the year round on the basis of the scale of wages and quotas of earnings for particular jobs, and the size of the fund for consumption accruing to the collective of the brigade after the final results of its work have been calculated.

Differentiation of income in accordance with the results of the productive activity will mean introduction of cost accounting in the collective farms, and consequently will promote an increase in labor productivity.

The elaboration of technically-founded output quotas and economically correct scales for labor, the introduction of cost accounting, the discovery of hidden reserves for increasing the productivity of labor and reducing cost — will all require accounting of labor in collective farms in terms of working days and hours. Accounting in hours is particularly important in agriculture, where various different jobs may frequently have to be done in the course of a working day. Moreover, accounting in hours makes it possible to judge the real duration of the working day.

Many progressive collective farms already are keeping accounts in this fashion, and this has not only not required additional labor or salaried personnel, but has even freed brigade leaders from excessive office work. Thus, in the Avangard collective farm of Chkalov District in Gorky Oblast, where time worked in the fields has been kept record of on an hourly basis, the brigade leader receives, at the beginning of each month a "day book for reporting labor and time," which contains a monthly record for each member of the brigade. Entered into this book daily in the usual fashion is the type and volume of work done by each member of the brigade, his earnings and then just one additional column, the number of hours he worked. At the end of the month (or twice monthly), the filled-out daybooks for labor and time are turned over to the bookkeeping office. This type of accounting makes it possible for the brigade leader and the collective farm board to form a judgment of the work of each collective farmer, of the amount of labor expended upon each type of work and crop, and to take the appropriate steps.

Accounting of the number of man-days of the established length that had been worked, or the number of man-quotas, can serve, when converted to the monetary wage scale, as the basis for calculating vacations due, and for the distribution among the collective farmers of supplementary monetary income and of payment in kind. The distribution of the additional income among the collective farmers in the brigade or team in accordance with the results of accounts kept in this fashion enjoys a number of advantages over distribution in proportion to the guaranteed monetary earnings.

Thus, in our opinion, the following problems will have to be solved in the course of further improvement of the forms of payment for work done in collective farms. Further introduction, in all collective farms, of forms of guaranteed payment for labor of collective farmers on the basis of a rise in the collective farm production is necessary so as to assure each collective farmer who works honestly fixed and stable annual earnings. In particular, there should be an economically justified ratio among the incomes of collective farmers working in different districts, in different collectiv farms of a single district, and in various branches of agricultural production. Toward this end, it is necessary to create special fixed and reserved (circulating) socialized funds for wage payment, toward which end each collective farm should establish a definite sum or percentage deduction from gross income and current monetary income to be paid into the wage fund and to the inter-collective farm insurance fund. In cases in which the differences in the incomes among collective farms are due to natural conditions or the site of the collective farm (differential rent) it is desirable to apply more highly differentiated procurement prices and differentiated taxes on the collective farms. Also necessary is a gradual introduction into the collective farms of forms of quota- and rate-setting for labor, analogous to the forms used in government-owned enterprises (and in particular, a monetary scale instead of use of the labor-day unit), with provision for incentives for the final results of the work of the collective (brigade, farm producing unit, or team). Also necessary is introduction into all branches of collective farm production of payment to labor per unit of production, with a differentiation of the incomes of the collective farmers in accordance with the final results of the work of the brigade, producing unit, etc., and also conversion of payment of the managerial personnel of the collective farm to a system that takes into consideration the produce produced by the collective farms and the scale of gross and net incomes. Also necessary is a considerable improvement in the setting of quotas on the basis of technical possibilities, and the development of new, scientifically properly founded quotas and a new wage scale, providing differentiation and payment not only in accordance with the quantity of work, the skill, and the seniority of the personnel, but also in accordance with the conditions of labor "laboriousness, harmfulness, natural and climatic features, and economic differences." Differences in the reproduction of the labor force, with consideration for the problems of skill, seniority and conditions of labor, should be the foundation for the general index of differentiation of wage rates and differentiation in average payment to labor by geographic zones.

The December plenum of the Central Committee of the Communist Party of the Soviet Union has proposed to party, government and agricultural agencies of republics, territories, oblasts, and districts to give maximum support to th initiative shown by collective farms in conversion to more progressive forms of accounting of and payment to labor, to make a profound study of their experience, to generalize from it, and to recommend the best of what is determined in this fashion to the collective farms for broad utilization. To enable the new possibilities for perfection of forms of organization and payment of labor, which are imperatively dictated by life, to become a reality and a mighty factor in the upbuilding of communism, it is necessary in particular to assure a greater coordination of the work of scientists and the practical personnel of agriculture in generalizing from the most progressive experience of the work of the collective farms under the new conditions of management now existing. Along with further broad experimentation in the field of economics and the organization of labor, a number of scientifically justified recommendations for changes in the Regulations of the Agricultural Cooperative should be adopte

P. Buyanov:

Improve the Servicing of Collective Farms With Equipment

In recent years, the Communist Party and the Soviet Government have set forth and are successfully carrying out major measures to assure a steep upturn in agriculture. The plenum of the Central Committee of the Communist Party of the Soviet Union held in September 1953, the Twentieth Congress of the Communist Party, and the subsequent plenums of the Central Committee of the Party have laid a foundation for a new stage in the development of our agriculture. The productive forces of the collective and state farms are developing at accelerated rates. The socially-owned production of the collective farms is rising uninterruptedly, and their monetary income and indivisible funds are increasing. On the basis of the great successes obtained in the development of agriculture, the plenum of the Central Committee of the Communist Party in December 1958 posed new goals for further development of the collective farm system.

The successful realization of the historic resolutions of the party and the government in the field of agriculture are assuring a powerful development of socialist industry, and the priority development of the production of the means of production. Heavy industry is the foundation of technical progress in agriculture. From 1954 to 1958 alone, Soviet agriculture was provided with 670,000 tractors (equivalent to 1 million calculated on a 15-horsepower basis), 370,000 harvester combines for grain, 570,000 trucks and much other equipment. There has been a considerable improvement in the qualitative composition of this equipment. Thus, in 1953 there were 556,000 diesel tractors in agriculture while in 1957 there were 1,233,000. Correspondingly, there were 88,000 cultivator tractors in the earlier year and 353,000 in the later. Today, there are 1,700,000 tractors in agriculture (calculated on the 15-horsepower basis), 500,000 grain and 120,000 silage harvester combines, about 700,000 trucks and millions of other agricultural machines and tools.

Of tremendous significance for the further development of the collective farm system was the sale of the equipment held by the Machine and Tractor Stations to the collective farms and the introduction of a new system of government procurement and a single scale of purchase prices for agricultural produce. As of November 1, 1958, 3,656 Repair and Equipment Stations had been established on the basis of the reorganization of the Machine and Tractor Stations. The Soviet government has sold the collective farms a large amount of different types of equipment since the reorganization of the Machine and Tractor Stations. As of November 1, 1958, the Machine and Tractor Stations had sold 463,000 tractors, 204,000 grain combines, about 58,000 silage and corn harvester combines, 510,000 seeders, and other machines, for a total of 16,100,000,000 rubles to the collective farms. During this same period, the collective farms acquired more than 4,400,000,000 rubles' worth of new tractors and various agricultural equipment. Today the foundation for growth in the socialized portion of the production of the collective farms is equipment and tools of labor that they themselves own: tractors, plows, seeders, harvester combines, and other machines. This has brought about a significant difference with regard to the prospects for the further development of the collective farms and their relationships with the government. The system of servicing the collective farms with equipment by the government has changed substantially. All this is creating the most favorable conditions for further rapid improvement in the socialized production of the collective farms.

In the projected seven-year plan for the development of our country's economy, socialist agriculture is given much attention as one of the most important branches of material production. During the seven year period, the total volume of capital investments in socialist agriculture will constitute about 500 billion rubles, and this will nearly double the actual investments of 1952-1958. During this seven year period, the collective farms will, in accordance with preliminary calculations, be able to carry out about 250 billion rubles' worth of construction for purposes of farm production, culture and service to the population, and civic improvement of the villages. It is proposed that 95 billion rubles be spent on acquisition of equipment. In the coming seven years, agriculture will receive more than a million tractors, about 400,000 grain combines, and a large quantity of other machinery and equipment. At the end of the seven years' period it is envisaged that electrification of all the collective farms in the country will be complete, for all practical purposes. Toward this end, work for purposes of electrification will be 150% greater than the volume of such work in 1952-1958. The consumption of electrical energy in agriculture will multiply fourfold. In order to carry out the objectives of electrification of the collective and state farms, it is necessary to make wide employment of the funds of the collective farms for the construction of inter-collective and inter-district power plants.

At the present time, all the collective farms in the country are engaged in major efforts in construction for purposes of improving their output capacity and for cultural and service purposes. It should however be noted that this work is usually done by the farms in a manner that involves little use of machinery, and that the time required to complete construction jobs is often dragged out, as is the launching of utilization of the structures erected. The collective farms do not possess a good basis of construction needs, and the corresponding means of mechanization required to carry out construction and assembly. They encounter difficulties in obtaining building materials on which there are priorities, as well as various types of equipment for the housing of livestock, granaries, vegetable storage structures, etc. In order to carry out in full the capital investments planned for the building of structures to increase production on the farm and to serve the cultural and other needs of the population, the seven year plan for development of the economy of the USSR should provide for assistance to the collective farms in carrying out their extensive program of capital construction. This assistance should come from the government building organizations and the agencies of supply of equipment and materials, in addition to which a special collective farm reserve of building materials should be established to be used in construction by individual farms and for inter-farm construction. At the same time, it is necessary to give every possible incentive to the organization of large inter-collective farm and inter-district construction teams, and to give them constant assistance.

Under the new conditions of development of the collective farm system, the collective farms, as the owners of the most important means of production, are taking all measures needed to increase their facilities in terms of materials and equipment. This will assist them to expand the socialized portion of their production more rapidly and to yield more produce per hundred hectares of agricultural land. In order to attain a higher level of development of the collective farm economy, it is necessary to improve and perfect the servicing of the collective farms with equipment needed for agricultural production in every possible way and without interruption. Today it is the Repair and Equipment Stations that are called upon to carry out this function.

A prime responsibility of the RES is the performance of major overhaul of collective farm machinery and various equipment. In order to carry out prompt and high-quality major overhaul of collective farm equipment, the RES must be in possession of an extensive pool of repair equipment, enabling them to do this work at low outlays of labor and funds.

The experience of the first months of work under the new conditions shows that many RES have had exceedingly little repair work to do. This is explained by the fact that in the course of carrying out the spring field work and the harvest of 1958, the collective farms themselves looked after their own tractors, and performed current repairs themselves.

The servicing of the collective farms with equipment needed for purposes of production by means of the system of RES that had been established should be performed in such fashion, as far as major overhaul is concerned, that government expenditures are amortized completely, that the machines are repaired at low cost, and that the repairs are of high quality. This in turn is possible on condition that the capacities of these repair shops be used to the full.

Let us consider, for example, the Pyatigorsk RES in Stavropol territory, which has a well-equipped standard repair shop, the book value of which is in excess of 1,280,000 rubles. It has all the necessary departments, with the required machine tools, needed for major overhaul of trucks and tractors. From the time of the reorganization in September 1958, only 10% of the repair work done by this repair shop was done by collective farms. Most of the repairs done during this period were for various organizations not related to agriculture. During the fall and winter repair season, that is from October 1958 to March 1959, the RES is in a position to repair about 240 tractors, but the collective farms it serves, the V. I. Lenin, and the Will of the Proletariat, are only undertaking to provide 15 tractors to be repaired during that period; as a result, the repair shop is using only six to seven per cent of its equipment for major overhaul of tractors. It must be pointed out that the capacity of the Pyatigorsk RES is adequate to provide major overhaul of tractors and complicated agricultural machines for a number of state farms now served by the RES at Mineralnye Vody as well as four collective farms served by the Yessentuki RES. Therefore it would be practical to abolish these two RES and to sell their buildings and equipment to large and economically sound nearby collective farms, to enable the latter to have their own repair workshops for current repairs and maintenance of their machines. The workshops of the Ramensk RES of Moscow Oblast, and certain others, also have exceedingly little repair work to do.

At the same time it must be noted that in some RES despite the fact that their repair shops have inadequate work, the time required to carry out the repairs is often greatly extended, and this has a negative effect on the time required for the collective farms to perform agricultural operations. Thus, the Mikhaylov RES in Stavropol territory, which has two departments, serves three collective farms in all: the Stavropolets, the Lenin, and the Temnolesskiy. However, this RES is performing repairs on the tractors of the Stavropolets collective farm with inexcusable slowness. For example a DT-54 tractor (number 15) belonging to the fifteenth brigade was out for two months for current repairs, a KD-35 (number 22) belonging to the second brigade was under repairs for two months, and a KDP-35 tractor (number 28) belonging to the fourth brigade was under repair for twenty days more than the required times. Similar shortcomings characterize the work of other RES. This demands constant attention on the part of agricultural and planning agencies so that the repairs of collective farm equipment will be organized in such fashion that the repairs of collective farm machines and equipment will be carried out promptly and well.

The small degree to which the repair shops are occupied in repairing tractors and complex agricultural machines during the period of field work is related to a substantial degree to the seasonal nature of agricultural production, and also to the as yet inadequate supply of tractors and certain other machines belonging to the collective farms. Under these conditions, each collective farm strives to do its work as rapidly as possible and to do as much as possible. However this may result in delaying the repairs of tractors and other complex equipment at the expense of their condition, and as a result, equipment is worn out earlier than it should be.

The only solution is a procedure in which all machines undergo preventive repair on a planned basis. Organization of repaired tractors and other machines should be based on a year-round schedule, as this is the most reliable mean of carrying out proper maintenance of machines and of assuring that they will be used at a highly productive rate. Conversion to this system would, of course, induce serious difficulties in the organization of repairs in good time, as different types of work are done in different volumes and within different periods of time from one collective farm to the next. However, these difficulties are capable of solution if the RES will carry out major repairs cheaply and well, and also exactly in the period designated. Were this the case, the collective farms would gladly have their machines repaired at the RES all year round, in accordance with schedules for repair compiled by the repair shops ahead of time. This would also result in gradually overcoming the very pronounced seasonal nature of the organization of repairs to agricultural equipment.

Conversion to a year-round schedule of tractor repairs requires proper thought, and it cannot be based on merely a single year of operation of machinery by the collective farms. It requires precise data on the operating condition of the tractor pool, model by model, and on the quantity of use they get between repairs, on the volume and dates during which all field use of the tractor is performed, etc. On this basis it is possible and necessary to introduce repair of tractors on a year-round schedule. This must be done gradually but with determination.

The economic profitability of organization of major overhaul on a year-round schedule is confirmed by the experience gained doing this in the old Machine and Tractor Stations. Thus, the introduction of year-round schedules for tractor repair in the Kinel Machine and Tractor Station of Kuibyshev Oblast made it possible to reduce the expenditur upon repair of tractors to the following degree (in thousand of rubles):

Type of Expenditure	1954		1956	
	Saving	Over-Expenditure	Saving	Over-Expenditure
Fuel and Lubricating Oils	10.9	—	39.7	—
Repairs	—	72.0	51.4	—
Wages to Staff	16.5	—	3.1	—
Expenditures on Administration and Management	0.3	—	4.0	—
Total	27.7	72.0	98.2	—

In 1954, the Machine and Tractor Station, functioning without a year-round repair schedule, over-expended 44,300 rubles on tractor repair, although it showed savings in particular respects. In 1956, when working in accordance with schedule, it saved 98,200 rubles.

On this basis, it would be desirable for the seven year plan for development of the national economy to emphasize the need for prompt and high quality performance of repairs (current repairs and current maintenance in the collective farm repair shops, and basic overhaul in the RES repair shops) on a year-round schedule. It must be borne in mind that the collective farms, as zealous managers of the means of production, will pose more stringent requirements to the RES, as regards the quality of the repairs to tractors and other complex machines. This requires the personnel of the RES, the agricultural and planning agencies and localities to determine at present, how and in what direction further improvements and reinforcements of the equipment available to the RES for repairs should be carried out, as well as that of the collective farms themselves. In a number of Machine and Tractor Stations it is necessary substantially to strengthen the repair pool available so as to enable them to carry out all orders from the collective farms for major overhaul, primarily of tractors and electrical motors, transmissions, universals, fuel equipment, etc., promptly. Therefore, the plan for 1959-1965 should indicate the need for further reinforcement and improvement of the repair equipment available in agriculture, with due allowance for gradual introduction of a high degree of specialization in repair work.

In addition to repairs, the RES serve as supply offices providing equipment and materials to the collective farms. The same functions are carried out by various supply organizations: Selkhozsnab, Avtotraktorosbyt, and Neftesbay, which results in an overlapping of functions. Moreover, they are often located in the same place. For example, in Stavropol territory, the Petrovskaya RES and the district branch of the Krayselkhozsnab are in the district seat, the village of Patrovsk. An even more paradoxical situation is that of the Pyatigorsk RES and the Pyatigorsk inter-district department of Selkhozsnab. Both of these organizations are on the territory of the Pyatigorsk RES. Their warehouses are only a couple of dozen meters apart, and nothing more than a wall separates their offices. Yet these independent organizations, and business relationships between them, as regards all problems of supply of materials and equipment to two collective farms — the V. I. Lenin and the Will of the Proletariat — are carried out through a complex system of documentation, as though these organizations were tens or hundreds of kilometers apart.

To give the RES the functions of a supply and marketing nature while in the same districts retaining special supply organizations, such as branches of Selkhozsnab, Avtotraktorosbyt, and Neftesbay, does not improve the situation in the localities and does not facilitate movement of spare parts and other material from industry directly to the point of production in the collective farms. When supply functions are carried out by RES, they serve merely as transmitting, or unloading, points between the collective farms and the district and interdistrict branches of special supply organizations. The result has been, in a number of cases, that movement of material goods in the system of supply of equipment and materials to the collective farms is slowed down, as an additional intermediary, a branch of the RES, has been added. In a number of cases these are being eliminated today, and their building and equipment are being sold to the collective farms. Under this system, documents still have to be written up to release various goods from warehouses of, for example, a district branch of Selkhozsnab to the RES, and from the RES to its departments and from them to the collective farms. The result is that a great deal more time is spent than if this movement went directly from industry through the oblast or territorial offices of Selkhozsnab, Avtotraktorosbyt, and Neftesbay to the direct consumers — the collective farms. As a result, there is an increase in the expenditure of funds for commercial and supply operations, and in the final analysis this increase is the cost of collective farm produce.

All this testifies to the fact that the present practice of servicing the collective farms with equipment for productive purposes is in need of serious improvement as far as the supply picture is concerned. In this connection it appears to us that the system of relationships between the collective farms and the government, as regards supply of materials and equipment for collective farm production, demands clarification. To be precise, there should be no duplication in the work of government agencies and organizations, but some unified system is needed. Once RES has been established with all the functions of servicing collective farms with production equipment, the local, district, offices of organizations such as Selkhozsnab and Avtotraktorosbyt should be eliminated. In this situation, supply of materials and equipment could be organized along the following chain: the oblast or territorial office of Selkhozsnab, Avtotraktorosbyt, or Neftesbay — to the RES — to the collective farm. There is ample reason for another proposal — to free the RES from supply functions and to concentrate all their attention on the carrying out of basic overhaul of equipment belonging to collective and state farms (tractors, combines, the other complex machines and equipment), employed in various branches of agricultural production. In this case, supply of materials and equipment can be concentrated in the hands of a single specialized supply organization.

In improving the servicing of the collective farms with producing equipment, questions of organization of systematic supply of spare parts for tractors and agricultural machines, as well as supply of repair materials of which there is an acute shortage, are also of importance. In this connection, it would be necessary to give more attention to the production of spare parts for agriculture, and to establish a permanent rotating fund in the RES or other supply organizations, as well as to organize in some, well-equipped RES, the repair of the most usable worn parts for tractors, automobiles and complex agricultural machines.

In the coming seven year plan, the collective farms are to carry out a major program of construction of buildings for purposes of farm production: housing for livestock, equipment for them, electric power plants, and other structures. During this period, the machine and tractor pool belonging to the collective farms will increase considerably. Improvement of the pool of materials and equipment available to collective farm production will pose ever-rising demands to government enterprises whose business it is to satisfy the needs of the collective farms for equipment for farm production purposes. The plenary meeting of the Central Committee of the Communist Party of the Soviet Union held in December 1958 has proposed that local party and government agencies take the necessary steps, in the immediate future, to improve the work of the RES, to reduce unproductive expenditures to the greatest possible degree, and to reduce the cost of the work they perform. Basing themselves upon a constantly expanding supply of equipment, the collective farms today possess vast possibilities for attaining a higher level of development of their socialized economy and a marked upturn in the well-being of the collective farmers.

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In order to attain a more efficient realization of the objectives of the seven year plan in our economic administrative district it is necessary that the development of industry be coordinated with the development of railway transport. However, the railway ministry is thus far not coordinating its plans with those of the respective National Economic Councils, and this results in the development of bottlenecks at a number of railway stations. In our opinion, it would be necessary, for example, to modify the boundaries of divisions and even of certain railway lines. Specifically, it would be desirable to transfer the Krasny Uzel-Alatyr Line from the control of the Kazan Railway to that of the Kuibyshev Railway. As a result, the Mordva Economic District will be served for the most part by a single railway line and this will, in the first place, help to provide normal conditions for the shipment of the output of so large an enterprise as the Alekseyev Cement Plant. It is at the meeting point of two railways and often finds it necessary to stop production of cement because of long delays in the supply of freight cars to it.

It should be noted that the Ministry of Automotive Transport and Highways has the power to take decisions in the field of highway construction bearing most intimately upon the interests of the economic regions, independent of the respective National Economic Councils. Specifically, we believe that the development of industry in the Mordva ASSR requires that highways be built to connect the republic with Gorky. This will also mean connecting Mordovia with Moscow. It is desirable to connect Ruzayevka with the Federal Highway from Moscow to Kuibyshev, and this will make for reliable communications between the Mordva Economic Administrative Region and the Penza, Saratov, and Kuibyshev Economic Administrative Districts.

In conclusion it is necessary to deal with one more problem of great importance to Mordovia. In the years immediately ahead, it will be necessary to intensify significantly the work done to prospect for useful minerals on the territory of the Mordva ASSR. Today there is every reason to believe that it is possible to increase the local raw materials resources of Mordovia in very short order, including petroleum. However, the Chief Geology Administration of the RSFSR underestimates the natural riches of the republic and is not providing adequate assistance to the geological parties working within the boundaries of the Mordva ASSR. The Ministry of Geology and Conservation of the USSR ought to require the Administration in question to provide, in the plans for prospecting during the first years of the seven year plan, a wider geological investigation of the territory of Mordovia. This is demanded by the national interest.

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G. Turkov:

The Modernization of Technological Equipment

The theses of Comrade Khrushchev's report to the 21st Congress of the CPSU envision an extensive program of reconstruction from the ground up, of expansion and technical re-equipment of existing enterprises in various branches and especially in the processing industry on the basis of complex mechanization and automation and of new technological processes calling for a widespread renewal and modernization of equipment. Such a reconstruction of enterprises as is indicated in the theses should be undertaken soon, and be of necessity accompanied by accretions to productive capacities and by a considerable rise in labor productivity.

The modernization of existing equipment is especially important for the expansion of production and the improvement of its technical level.

The following figures describe the composition of the metal-working equipment at the disposal of the industry of the Kursk Economic Council as of August 1, 1958: 65 per cent of the equipment has been in use for not over ten years, 25 per cent has been in use for from 10 to 20 years, and about 10 per cent for over 20 years. Consequently, 35 per cent of the stock of metal-working equipment has become, to all intents and purposes, obsolete and stands in need of replacement.

The output of lathes and forge-press machinery is increasing from year to year, but the renewal of the existing stock is proceeding much too slowly: from 1 to 2 per cent of all metal-cutting lathes are replaced yearly.

Under these conditions, modernization seems to be the most practicable means of increasing equipment productivity. The Economic Council intends to modernize not less than 20 per cent of the existing metal-working equipment between 1959 and 1965. Practice has shown that all-round modernization increases the productive capacity of a lathe from 30 to 35 per cent. As planned by the Economic Council, the modernization scheme will have an effect equivalent to the putting into operation of 400 new units of metal-working equipment. Factory work-space remaining unchanged, the additional production that will be gained from the industrial enterprises operated by the Economic Council through this modernization program with the same equipment will amount to 50 million rubles.

An extremely effective form of machine-tool modernization is to make them more versatile technologically by increasing the number of simultaneously working spindles, enlarging the dimensions of machined parts, installing such adaptations and accessories as were lacking in the old equipment, the specialization of machine-tools by structural alterations to permit the performance of special operations, by increasing the capacity and operating speed of the equipment, by mechanizing manual processes, and by improving the accuracy and longevity of the equipment.

If the form of modernization to be applied to metal-cutting machine-tools is to be correctly determined, it is very important that a time-study be made of the labor consumed in the operation of various types of general-purpose machine-tools. The table presented below contains time-study data showing the relative proportions of machining time for various types of machine-tools under various conditions of production organization:

	Proportion of Machining Time (in %)	
Machine-Tools	Unit & Small-Scale Serial Production	Large-Scale Serial & Mass Production
Turning Lathes	30	40
Turret Lathes	46	65
Vertical Drilling	52	68
Radial Drilling	32	58
Milling	38	48
Cylindrical Grinders	48	62

These figures are convincing proof above all of the large amount of time on work with metal-cutting equipment that is spent in manual operations.

We will first examine the possibilities for cutting down on machining time.

Large-feed working is seldom done at the present time on turning and turret lathes and prevailing cutting speeds in work with instruments furnished with metal-ceramic alloys are considerably slower than recommended by standards. Hard-alloy instruments put out by industry are capable of cutting speeds up to 300-400 meters per minute, but in practice these speeds do not exceed 70-90 m/min. The reason for the weak utilization of hard-alloy tools lies in that by far most lathes have low spindle rotation speeds and small-volume feeds, and also inadequate capabilities for high-output metal cutting.

By stepping up cutting speeds on turning lathes to 120-150 m/min., on drilling machines to 50-60 m/min. and on grinders to 50 meters per second, it will be possible to cut machining time by an average of 60-80 per cent. The mass application of power cutting methods will enable a 30-40 per cent increase in labor productivity.

We will now take a closer look at the question of ways to cut down on auxiliary time.

In turning and grinding work, operation of the machine-tool takes up about 40-50 per cent of auxiliary time and the mounting, securing and withdrawal of the work-piece about 20-30 per cent. The greatest expenditure of time is incurred in bringing the cutting head up to, and withdrawing it from the work-piece, mounting the cutters around a graduated circle, changing the cutting heads (on turning lathes) and, correspondingly, transferring the spindle to the vertical position (on grinders). In milling work, 30-36 per cent of the auxiliary time goes into machine operation, and 37-40 per cent into mounting, securing and withdrawal of the work-piece.

It may be concluded from the above data that, if auxiliary time is to be reduced on turning, grinding and milling equipment, modernization must take the form of the automation of machine-tool control: the automation of the movement of the work-table, the automation of the treatment cycle, the use of high-output clamp arrangements. On turret lathes, machine operation consumes 65-75 per cent and the mounting, securing and withdrawal of the work-piece 9-20 per cent of auxiliary time. The automation of the securing, detaching and turning around of the turret head, the mechanization of the motion of the longitudinal and transverse work-tables, and also of the feed control, would achieve a considerable reduction of time expenditure and would facilitate the servicing of this type of lathe.

A considerable portion of working time is spent on measuring work-pieces while they are being machined. On turning lathes, this activity takes up 16-32 per cent, on grinders — 24 per cent and on milling machines — 9-14 per cent of the auxiliary time.

A relatively small proportion of the total working time is spent on technical maintenance of the working station (5-9 per cent of the duration of the work-shift), but the possibilities for cutting down on these expenditures of time, too, must not be overlooked when embarking on a modernization job. A large portion of the time spent on servicing the working station is taken up by adjustments to the machine-tool and sweeping up shavings. Frequent adjustment results, as a rule, from failure to anchor the instrument tightly, from low resistance to vibration of individual assemblies in the tool, especially at high cutting speeds. The absence of reliable means of crushing shavings and certain other structural peculiarities of existing machine-tools lead to considerable expenditure of time on gathering up the shavings and preclude the possibility of mechanizing this operation. Hence it is important to devise a cutting instrument to crush shavings, and also an attachment to mechanize the operation of drawing them off; such an accomplishment would increase the effectiveness of the modernization of existing equipment.

The following conclusions may be drawn from an analysis of working time.

To achieve full utilization of the properties of hard-alloy tools, the modernization job should aim for increased speed and output capacity of the machine-tool. When installing high-powered electric motors and stepping up operational speeds, the machine-tools must be more firmly tightened up and made more resistant to vibration.

Stepping up the operating regime of a machine-tool's cutting operations decreases machining and increases auxiliary time. The overall modernization of equipment requires, therefore, the mechanization of manual operations and the automation of the production cycle through the extensive application of hydraulic, pneumatic and electrical mechanisms and devices. Experience has shown that many types of operations, including the securing of the work-piece, can be mo effectively mechanized by means of pneumatic arrangements.

Equipment modernization must be obligatorily accompanie by organizational-technical measures to ensure completely safe working conditions in the operation of modernized equipment.

The complexity of the modernization treatment required by the many types of equipment and the large scale on which modernization is contemplated in the planning figures of the seven-year plan, make the suitable organization of this work imperative. In our view, special designing teams should be set up in the master mechanic or technician shops of large enterprises to work out modernization projects. These projects should be discussed in the technical councils of the enterprises with the participation of workers from the technological and maintenance services. As a rule, modernization should be carried out simultaneously with general overhauling operations. It would seem advisable to set up a bonu system for successful and high-quality fulfillment by maintenance brigades of their modernization work equivalent to 25 per cent of total income earned on repair work. All maintenance services of enterprises must be involved in modernization work, so that this important national economic task can be accomplished within a short time.

M. Ippa:

A Higher Level of Industrial Specialization

The theses of Comrade N. S. Khrushchev's report to the 21st Congress of the CPSU give a great deal of attention to he specialization and cooperativization of industry and other branches of the national economy. And this is understandable: specialization and cooperativization constitute one of the chief conditions for increasing the productivity of labor, lowering production costs and improving the quality of finished manufactures. The expansion and perfecting of specialization and cooperativization are extremely important in regard to the Belorussian SSR. In Minsk, Gomel, Vitebsk and other industrial centers of the republic, many machine-building factories have been built before and since he war that incorporate the complete vertical production of many types of articles. Automobile, tractor and bearing plants, and other large-scale specialized enterprises were established by former union ministries on the basis of ntra-managerial cooperation. They have been supplied with castings, hardware, semi-finished goods and allied products from enterprises under the purview of their ministries, but ocated far beyond the borders of the republic, there having been almost no allied industries within Belorussia itself. Not only machine-building and instrument-making factories, but also garment, footwear, furniture and other industrial branches are also needed in the republic if efficient and correct specialization is to be established.

The reorganization of industrial management on a territorial basis has created favorable conditions for the elimination of the departmental approach to the solution of probems of specialization and cooperativization. The BSSR Economic Council has already partially carried out several measures to improve the specialization of industrial enterprises and to develop intra-republic cooperativized production. The BSSR Planning Commission, with the cooperation of the BSSR Economic Council, has worked out several important proposals to expand product and technological specialization in the industry of the republic, particularly n foundry production. The implementation of certain measures has brought about a rise in the level of industrial specialization in the republic and some improvement in the system of technical and production relations among enterprises. Enterprises engaged in the manufacture of automobiles, tractors, metal-working machinery, motorcycles, bearings, ensilage combines and other forms of production carried out in the BSSR are fully specialized.

The Minsk tractor factory discontinued the manufacture of crawl-type tractors in 1958 and now specializes in the production of wheel-type tractors. The production of 25-ton dump-trucks has been transferred from the Minsk automobile factory to the Zhodino factory, which specializes in the output of heavy-duty self-propelled dump-trucks. More clear-cut specialization in the manufacture of pumps has been introduced at the Stalin machinery factory at Bobruisk. On the basis of a series of local industrial enterprises in generalized fields of production that were working under capacity, and also of certain enterprises in an incomplete state of construction, a factory was established at Baranovichi to make machinery parts and accessories, and enterprises are being set up for production in the electrotechnical field. The organization in the republic of allied enterprises has made possible the discontinuance of such practices as the unrational shipment of castings, technical rubber products, etc.

The production capacity of Belorussian enterprises engaged in the manufacture of tractors, automobiles, metalworking machinery, electric motors, pumps, foundry products and transformers is to be considerably expanded in the future, and plant facilities will be provided for the production of certain instruments and cable goods. During the years covered by the seven-year plan, the machinery industry of the BSSR will be further developed along the lines of product, component and technological specialization.

A factory is to be built in 1959-1965 which will supply the machinery and metal processing industry of the republic with various forms of castings in small quantities or individual pieces, including gated casings. It is intended during the same seven years to expand the forge shop of the Minsk tractor factory, to set up a new specialized forge shop at the spare parts factory at Grodno, shops for producing fittings and formed parts in Minsk and for rubber components and products in Mogilev oblast. A specialized plant will be built to manufacture plastic components and articles. In addition, specialized enterprises will be erected in the BSSR to engage in the production of individual parts, unit assemblies and tractor and automobile components.

Measures already carried out, and to be implemented in 1959-1965 to specialize and cooperativize the machinery industry will permit the more widespread conversion of enterprises to continuous mass production methods, thereby increasing the output of needed machinery and instruments, increasing the productivity of labor and reducing production costs. Thus, as a result of the specialization of the tractor factory in the manufacture of wheel-type tractors and the setting in motion of new, automatic continuous production lines, the output of machinery here will be almost tripled within the seven-year period. Between 1959 and 1965, the motorcycle factory will increase its production of motorcycles, the specialty of the factory, by a little over 100 per cent, and the manufacture of bicycles will be discontinued.

However, the planning and execution of measures will not by any means solve all the important problems of specialization and cooperativization of the machinery and metal-processing industries of the BSSR. So far, for example, one of the largest machinery enterprises of the BSSR — the Gomel Agricultural Machinery Plant — and other farm machinery enterprises have not yet received enough orders to ensure their operation to full capacity. Problems of specialization have not been worked out for tool factories and shops, repair plants and shops, many middle and small sized enterprises operated by the Economic Council, the ministries and departments, local councils and producers' cooperatives. Ways have also to be determined for the rational utilization of the floor space and equipments of some of the former MTS's.

The solution of these and other problems will help to make considerable amounts of production space and equipment available for increasing the output of scarce products and for organizing a series of new lines of production, including the specialized mass production of sub-assemblies, components and spare parts for machinery. In particular, a great economic gain would result from the specialization of more than 60 maintenance plants and shops and of 100 tool plants.

If this and other problems are to receive correct and effective solutions, they will have to be studied from an overall economic point of view, enterprises will have to be specialized on the basis of regional balances of production and utilization of machinery, instruments, sub-assemblies and components, and they will also have to be coordinated with the specializations of other enterprises. Unfortunately, problems involved in the specialization of individual enterprises are often worked out without reference to other enterprises, without a thoroughly built up economic groundwork for measures contemplated, and with considerable delays. This is why the field of industrial production of the Mogilev hoisting and carrier equipment plant had to be revised several times in 1958. It was at first decided to convert this enterprise into an automobile trailer factory. Later the decision was taken to organize the production of scrapers and bulldozers. The plant still puts out overhead travelling cranes. But the problems of sources of supply to the plant of steel castings and of which enterprises in Belorussia will produce automobile trailers remain unsolved.

The proposal to set up a shop for casting formed parts at the Mogilev metallurgical plant was incorrect, as this type of work can be performed more efficiently at a specialized factory.

It must be remarked that the planning figures worked out by the State Planning Commission of the USSR on specialization and cooperativization provide for the full satisfaction of the requirements of the BSSR machine-building industry in electrodes and metalware from specialized factories in the RSFSR only in the last years of the seven-year plan. Consequently, enterprises in the republic will at first experience a shortage of these items and will have to produce them themselves in small quantities. However, a more advisable solution may be found in this case. The Gomel auto-maintenance shop recently started producing electrodes (1-1.2 thousand a year) and, with very negligible additional outlays, their production may be increased to 5-6 thousand a year. This would fully meet the needs of the enterprises of the republic during the next few years and would enable a more extensive mechanization of the production process and ensure the earning capacity of electrode production at the Gomel auto-maintenance shop.

The proposal to set up the small-scale production of gas ranges at a few enterprises in the republic must be viewed as economically unwarranted. The mass production of this item is to be organized at enterprises operated by the Economic Council, according to a resolution of the CC of the Belorussian CP and the BSSR Council of Ministers. The manufacture of metal bedsteads at certain metal-processing enterprises must also be regarded as an unjustifiable duplication of effort.

In order to eliminate these shortcomings, a long-range plan, based on the planning figures approved by the 21st Congress of the CPSU, will have to be worked out in the near future for the specialization and cooperativization not only of large-scale, but also for medium-sized and small-scale enterprises, and also to draft specific schemes for intraregional and interregional cooperation. This will give a great boost to the national economy and will make possible the release of considerable productive capacity for the increased output of scarce products and for the organization of the specialized mass production of composite parts, assemblies and components of machines.

The manifold working out of specialization and cooperativization problems will require that balances be drawn for the regional production and consumption of a wide variety of articles, assemblies, components, and also that the productive capacity of a large number of enterprises and shops be thoroughly studied, plans drawn and foundations laid for the specialization of each of them. In order to accelerate this work Gosplan and its project and research establishments must render systematic assistance to the republics and raions in the drafting of long-range specialization and cooperativization plans, and must coordinate the plans of the various republics and raions. Moreover, more effective guidance methods will have to be applied such as, for example, the dispatching of groups of specialists from planning agencies to the field, where they, with the participation of the local party organizations and enterprise staffs, may gather the necessary data and work out suitable proposals on problems of specialization and cooperativization.

The possibilities for improving and developing specialization and cooperativization are not exhausted by the mere elaboration of a long-range plan. It is also necessary to ensure systematic checks on the execution of the plan and decisively to eliminate incorrect tendencies. It would hence be desirable to institute the compulsory supervision by the State Planning Commissions of the union republics of industrial enterprise erection and reconstruction projects to ensure their adherence to the specialization and cooperativization plans as promulgated. In our opinion, this plan should be taken into account in future when satisfying the demands of enterprises for materials and technical equipment.

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A. Mitrofanov:

The Replacement Production of Machine-Tool Equipment

Side by side with such branches of heavy industry as metallurgy (ferrous and nonferrous) and the chemical, fuel and power sectors, the machinery industry will have an enormous contribution to make to the fulfillment of the seven-year program, especially in the area of machine-tool production, since the technical level of present-day production is determined above all by the degree of perfection of the machine-tool equipment used. The theses of Comrade N. S. Khrushchev's report to the 21st Congress of the CPSU point out that, during the period from 1959 to 1965, fundamental improvements will be achieved in the technology of production and machine-building enterprises will be extensively re-equipped and modernized, a considerable expansion in the mechanization and automatization not only of basic, but also of auxiliary operations will be carried out — primarily in the foundry and forge-press industries, not less than 1,300 automated production lines will be put in operation, and attention will be given to developing the production of special and multi-head machine-tools and of their automatic operation-sequencing controls, of punch and die presses and of plants for accurate die casting, and casting by the sand, shell-mold and investment processes. The year 1965 will witness the production of 190-200 thousand metal-cutting machine-tools, of which 38 thousand will be special, specialized and multiple combinations and 36.2 thousand will be forging presses, 250-271 automatic and semi-automatic production line installations, a large number of instruments and also equipment for rolling mills and foundries.

The fulfillment of this program will require an utmost intensification of effort by the workers in the relative branches of the machinery industry. The agencies in charge of directing our technological policies in this field and the designing and planning organizations carry an exceptionally heavy responsibility for the successful execution of the tasks of machinery replacement production.

In order to effect the technological re-equipment of our industry as soon as possible, it is necessary that the relative proportion of units representing the last word in metal-cutting and forge press machinery be increased as part of the process of plant renovation. Take, for example, special, specialized and multiple-head metal-cutting machines. In 1940 they comprised 11.44 per cent, in 1950 — 12.21 per cent, in 1955 — 14.16 per cent, and in 1965 they are intended to comprise up to 19 per cent of the total yearly output of metal-cutting equipment. Consequently, about 160 thousand units of low-output all-purpose metal-cutting equipment will be produced in 1965, or more than 80 per cent of the total output. This cannot, in our view, be regarded as correct.

It is planned that, by 1965, forge-press machinery will constitute 15.34 per cent of the yearly output of all metal-working equipment (in 1940 the proportion was 7.39 per cent, in 1950 — 11.3 per cent, in 1955 — 14.22 per cent and in 1957 — 15.6 per cent). This planned figure must also be objected to. It may be noted for comparison purposes that forge-press machinery has become 23 per cent of all metal-working equipment in the USA and 33 per cent in the German Federal Republic. In 1953 the forge-press machinery inventory of the USA numbered 576.5 thousand units, or 20 per cent of the total stock of metal-working equipment of the country; in other words, there was one forge-press for every four metal-cutting machines. As of January 1, 1957, forge presses constituted 17.3 per cent of the total stock of metal-working equipment in our country.

It is worth noting in this connection that many of our automated production lines are set up and operated on the basis of metal-cutting equipment, which represent the least effective metal-processing methods. At the same time, much too little attention is being given to the installation of automatic production lines based on forge-press and foundry equipment. Therefore, the structure of the yearly metal-processing equipment output (including units for use in automated production lines) will have to be altered radically, laying emphasis on the production of improved types.

In our view, in the process of renovating the existing inventory of machinery, and chiefly of machine-tool equipment, special attention should be given to the modernization of antiquated but still useful machines and gear.

The theses of Comrade Khrushchev's report to the 21st Congress of the CPSU stress the importance of modernization as a means of replacing obsolete equipment and fundamentally improving production technology. In regard to the processing industry, according to the theses, the seven-year plan starts from the premise that the fundamental reconstruction, expansion and technical re-equipment of existing enterprises on the basis of complex mechanization and automation and of new technological processes, aimed at an extensive plant renewal and modernization, must be a basic objective of the next few years. A considerable portion of the state's planned capital outlays will be poured into the completion of enterprises in process of construction, the reconstruction of existing enterprises and the modernization of plant.

It has become pressingly urgent to replace the machine inventory currently in operation, as it often fails, by and large, to keep pace with the requirements of modern technological progress. But is is not objectively possible to replace it entirely, and it would not be sensible or economically useful to try. It has been shown in practice that obsolete plant can, in many cases, be converted into the most up-to-date and efficient of equipment by means of modernization. Modernization is, therefore, a powerful, as yet unexhausted source for renovation and improvement of the technological plant now in use.

Let us look at the problem of machine-tool equipment. On the basis of the stock of metal-cutting and forge-press machinery in operation as of January 1, 1957, and also of their actual produced output in 1957 and of increased production rates planned for the current seven-year period, it can be said that our industry, working only for the domestic market, will be able to ensure, during the seven-year period, the yearly replacement of merely 1/14 to 1/9 of the machine-tool stock and 1/16 to 1/11 of the forge-press equipment inventory, and at that it would only amount to simple replacement production. And if only one-half of the newly produced equipment is devoted to expanding production, the proportion of plant to be replaced each year will be decreased to less than half. Actually, however, this proportion will be reduced even more, and for a number of reasons. These approximate figures show that, unless we resort to modernization of machine-tool equipment, it will be impossible within the next few years to accomplish the task of technologically re-outfitting our industry and especially its metal-processing branches.

As we know, plant modernizations have been carried out before, but on a small scale and at low technological levels. Thus, during the period from 1945 to 1955, no more than about 60 thousand machine-tools were modernized. The average yearly percentage of modernization was very low — not over 0.5 per cent. And this was limited to increasing the operating speed and output capacity of the machinery.

The avenues of technological progress as a whole and of prevailing tendencies in modern machine-building in particular, have made for great diversity of avenues of modernization. And, although modernization offers considerably narrower possibilities for constructive changes than can be gained by designing new machinery, every new development in machine-building at once engenders a parallel advance in the field of modernization.

The effectiveness of modernization will depend, in the final analysis, on the extent to which its technology and results keep pace with modern trends of technical progress. Careful judgement should therefore be exercised in the selection of units to be modernized, preferential consideration being given to the possibility of further structural improvement and of applying the most advanced production methods in the modernization job to be done. The latter factor is especially important to the reduction of modernization costs.

The manner in which any particular modernization problem is solved, intrinsically, if not critically, affects its economic effectiveness. Take, for example, the modernization of obsolete low-speed power-looms. The plan proposed by the Klimov textile machinery plant provides for the replacement of 172 parts and would involve a cost of 1,400 rubles; speed would be increased to 202 revolutions per minute. But under the plan worked out by the Yartsev factory, only 10 parts would be replaced, the speed would be increased to 216 revolutions per minute and the modernization job would cost only 157 rubles. This example graphically shows that one cannot adopt the first modernization method that comes along, but should instead thoroughly study every possible alternative method and select the most economically effective among them. In order to decide on the most effective alternative modernization procedure, appropriate calculations have to be worked out to determine its economic effectiveness (based on such data as quantity and quality of the output to be produced, the unit cost of this output, and also on the return to be expected from the outlays that will be required). Since it would be put into practice for reasons of economy, a modernization scheme would have to contribute to the reduction to a minimum of social unit production costs, i.e., it would have to yield savings in social labor and, consequently, raise its productivity. Otherwise it would be pointless.

The specific character of modernization as a form of replacement production of the instruments of labor introduces certain peculiarities into the manner of determining its economic effectiveness and suitability. To be precise: when determining the expediency of a modernization procedure, the costs involved should be kept commensurate with the price of new, similar instruments of labor. In practice, however, this elementary rule is often broken. Thus, in 1956, while the average cost of modernization (together with capital repairs) at the Likhachev automobile plant in Moscow comprised no more than 24 per cent of the book value of modernized equipment, in individual cases the cost of modernization was 1.5-3 times higher than the price of similar, new equipment. For example, the modernization of two DIP-200 screw-turning lathes, with the installation of a hydro-copying stylus attachment, came in one case to 28.4 thousand rubles and in the other to 15 thousand rubles. And this at a time when the Red Proletarian Factory was selling similar new lathes at much lower cost.

As indicated in the table below, relatively "young" equipment (in use for up to 10 years) is also susceptible of modernization (see table below).

A simple comparison of the average age of machine-tools currently in use (12-18 years) with the periodicity of emergency of new models of such machinery (every 5-7 years) reveals an objective justification for the modernization of relatively "young" (under 10 years of age) machine-tool equipment. As a result of the rapid rate of present-day technological progress, it often happens that individual machines and machine-tools become obsolete before they have managed to become standard in their field. It becomes just as necessary, therefore, to modernize them as it is to modernize older machines and machine tools.

One of the ways in which modernization could easily improve plant productivity would be by stepping up the speed of technological processes. Thus at the present time, cutting speeds in turning and mill work as a rule do not exceed 150 meters per minute although they could be stepped up to 400 meters. Even such a comparatively uncomplicated modification as the replacement of drive sheaves and the installation of roller-bearings would afford a 150-200 per cent increase in cutting speeds.

(Continued on Page 76)

Age Distribution of Modernized Equipment at Certain Enterprises for 1956-57 (in %)

	Year	In Use		
		Under 10 Years	From 10 to 20 Years	Over 20 Years
Ordzhonikidze Machine Tool Factory	1956	11.6	69.8	18.6
	1957	19.0	47.7	33.3
Red Proletarian Machine-Tool Factory	1956	23.5	55.9	20.6
	1957	37.0	48.2	14.8
Kirov Dynamo Factory	1956-1957	37.2-24.6	50.9-53.8	11.9-21.6
Vladimir Ilyich Electro-Mechanical Plant	1956	17.8	78.7	3.5
	1957	10.0	15.4	74.6
Small-Displacement Car Factory	1956	22.5	52.2	25.3
	1957	56.4	23.0	20.6

S. Pavlov:

An Important Factor for Increasing the Productivity of Labor

The theses of Comrade Khrushchev's report to the 21st Congress of the CPSU on control figures for the development of the national economy of the USSR during 1959-1965 underlines the importance of fundamentally improving production technology and re-equipping the machine-building industry through extensive equipment replacement and modernization. The accomplishment of this primary task will require a considerably stepped-up production of metal-working machine-tools and forge-press machinery. The control figures of the seven-year plan envision that, by 1965, the inventory of metal-working equipment will have increased to 50 per cent more than the figure it had been expected would be reached in 1958. If this is to be achieved, the output of machine-building plants will have to increase to almost double its present level. The production rate of the machine-building industry can be accelerated to exceed the rate of growth of metal-working equipment production by more fully exploiting avenues of possible improvement of production processes, by the practical application of technological advances, by large-scale, over-all equipment modernization, the development of assembly and component production specialization, and by increasing the skills and qualifications of workers, engineers and technicians. The productivity of labor would at the same time be considerably increased by improving the composition of the output of metal-working equipment.

The following figures(1) show how the internal composition of the production of metal-cutting machine-tool equipment has changed:

Types of Machine-Tools	1940		1951		1958 Expected Output		1965 Projected	
	Quant.	%	Quant.	%	Quant.	%	Quant.	%
Turning	11,523	19.5	23,142	32.4	33,900	24.4	41,400	20.7
Drilling	15,861	26.7	12,145	17.1	27,800	20.0	28,200	14.1
Milling	3,701	6.3	3,827	5.4	13,900	10.0	25,400	12.7
Grinding & Polishing	2,094	3.6	4,049	5.7	7,360	5.3	17,200	8.6
Turret Lathes	2,088	3.6	1,583	2.2	3,470	2.5	8,400	4.2
Automatic & Semi-automatic	2,039	3.5	981	1.4	3,610	2.6	7,000	3.5
Planing & Mortising	2,379	4.1	3,295	4.6	5,000	3.6	4,400	2.2
Boring	124	0.2	327	0.5	970	0.7	3,400	1.7
Special, Special-purpose & Multiple-head	6,688	11.4	7,560	10.6	19,000	13.7	38,000	19.0
Others	11,940	21.1	14,273	20.1	22,990	17.2	26,600	13.3
Totals	58,437	100	71,182	100	138,000	100	200,000	100

1965 will witness a greater quantitative importance in the roduction of the more progressive types of machine-tools: milling, grinding and polishing, capstan lathes, automatic nd semi-automatic, special, special-purpose and multiple-head machines. The machine-tools that will be put into operation in the course of the seven-year period will be far superior to existing equipment in respect of their degree of mechanization. It should be borne in mind when analyzing the data of the table that the category of automatic and semi-automatic machine-tools includes only turning lathes, and that the total 1965 output of automatic machines in the other categories (grinders and polishers, milling and drilling machines) will comprise about 15 per cent of the production of machine-tools of all types.

No less than 1,300 automatic and semi-automatic sequenced production aggregates are to be put in operation during the seven-year period and their output is to be raised to 250-271 assembled aggregates in 1965 (against 147 assembled aggregates in 1958).

The production of milling machines will grow 1.83 times during the seven-year period, of grinding machines — 2.34 times, of automatic and semi-automatic machine-tools — 2 times, and of boring machines — 3.5 times.

An improvement in the composition of the output of metal working equipment will have a marked effect on the rise of labor productivity. Thus, by shifting the working of the most labor-consuming machinery parts (base plates, bodies and frames, sliding blocks and carriages) from planers to multi-spindle plano-milling machines will bring about a 6- to 8-fold speed-up in cutting time, considerably reduce preparatory-completion and auxiliary operation time and will decrease the all-round labor input by one-half or two-thirds. By machining the rotor shafts of electric motors on automatic sequenced production aggregates, 10 machine-tools and 16 production workers will be released for other work, the labor involved in the machining of shafts will be reduced to almost one-fourth and mechanical processing costs will be decreased by one-third.

Increasing the output of grinding tools, especially for trimming and finishing operations, will permit a considerable improvement in the accuracy of machinery production and, consequently, in their durability and productivity. In addition, the use of precision grinding and polishing tools in the machining of various parts will make possible the elimination of such labor-consuming operations as scraping and scouring, and will increase labor productivity by a factor of 10 or higher.

The plan also provides for a 50 per cent increase in the production of forge-press machinery, which is to reach 36,200 units by 1965.

The improvement of the composition of the metal-working equipment inventory, planned for the seven-year period, will help to raise the technical-economic level of machine-building production. It seems to us, however, that, as they stand at present, the draft schedules for the development of metal working equipment production do not take full stock of the possibilities for improving the composition of this production. Thus, the planned growth in the output of automatic and semi-automatic sequenced production aggregates seems to us inadequate and not consonant with the needs and requirements of broad segments of the machine-building industry. The production of automatic and semi-automatic sequenced aggregates, in our opinion, may be increased to at least 8-10 times the figures stipulated in the draft schedules of the seven-year plan by mobilizing the internal reserves of machine-building plants. There are at least 3,000 machine-building factories in our country with work forces of over a thousand persons each. Each of these factories is in a position, at the present-day level of machine-building production, to construct a 10- to 12-unit automatic or semi-automatic sequenced production aggregate within one or two years without harm to its basic schedule. It is a duty of the machine-tool designers to provide blueprints for standard automatic sequenced aggregates in good time, and to assist and consult with the designing bureaus of machine-building factories in the planning of automatic sequenced aggregates, taking into account the peculiarities of production in the various branches of industry and at individual enterprises.

The experience of certain plants shows that automatic and semi-automatic sequenced production aggregates may be built in the context of the modernization of the existing stock of universal lathes. Every means must be taken advantage of when modernizing machines, to fit them for incorporation into automated lines.

The increase (200-230 per cent) in the output of technologic equipment for foundry production tentatively stipulated in th seven-year plan seems to us inadequate. In respect to the level of mechanization and automation of production processes, the foundry shops of machine-building works are lagging considerably behind machine and assembly shops at t the present time. Foundry production is seriously in need of reconstruction; it has to be equipped with high-output cas ing machinery, conveyors, apron feeders and tampers, and hoisting and hauling equipment. Not as much benefit is to be derived from the modernization of existing foundry shop equipment as is possible in machine-shops. It seems to us, therefore, that the economic councils and factories will hav in the current seven-year period, to explore possibilities for increasing the output of foundry machinery by 350 to 400 per cent by mobilizing their internal resources.

The output of forge-press equipment is rising at an unsatisfactory rate. The production of this equipment will gro 150 per cent during the seven-year period, i.e., at the same rate as the output of metal-cutting equipment. The maintenance of such a proportion in the production of forge-press machinery and machine-tools will lead to the manufacture of unfinished articles predominantly by hand-forging metho as formerly rather than by accurate drop forging and cold sheet-metal stamping and, consequently, a considerable amount of the ferrous and non-ferrous metals needed by the machine-building industry will be lost as shavings, and flas and cutting processes will remain the prevalent method of working metals. It might be remarked that the output in 1957 of forge-press machinery in the USSR was 17.3 per cent of the production of metal-cutting machine-tools while in the German Federal Republic, for example, it was 39 per cent.

The improvement of the composition of the production of metal-working equipment is an important national economic task. Its successful fulfillment requires a correct estimate of the trends of technological progress at the present stage of development of the machine-building industry and utmost emphasis on the most highly productive forms and aggregates of equipment.

FOOTNOTES

(1) This table was compiled on the basis of data from the statistical compendium USSR Industry (Gosstatizdat, 1957, 208 pp.) and from planning materials of the Machine-Buildin Division of the State Planning Committee of the USSR.

I. Bogun and A. Gurevich:

Urgent Tasks of Specialization in Mechanical Engineering

The theses of Comrade Khrushchev's report, "Planning Figures for the Development of the National Economy of the USSR during 1959-1965," envision that our machine-building industry will develop at a rapid rate. The machine building industry must equip enterprises with new plant and improve production technology, which will be a decisive factor for increasing the productivity of labor, will ease working conditions and will contribute to effecting further reductions in the work-day.

As outlined in the planning figures, the machine-building industry, in its forthcoming expansion, will require a considerable development of production specialization and cooperativization. Unfortunately, the planning of specialized production and, especially, of the production of sub-assemblies and components for various types of machinery is hindered by the lack of a specific nomenclature of assemblies, sub-assemblies and components of general (among the various branches of industry) application. Catalogues of constituent parts for the various machines used in different industries and a consolidated intra-industrial catalogue are needed to work out such a nomenclature.

The specialization of the machine-building industry is also held back by the lagging elaboration of standards and standard specifications for sub-assemblies and components of general application. The fact is that present-day standards are limited to the specification of a minimal number of basic parameters for various types of industrial products, but do not cover all the data necessary for their manufacture. This may be illustrated by the example of the parametric GOST (All-Union State Standard) in effect for compressors of various types and purposes. The absence in this standard of such over-all assembly and sub-assembly data has led to a great heterogeneity in the structural design of parts. This would not have happened if type and basic specification standards had been worked out for interchangeable compressor parts, sub-assemblies and assemblies to supplement the parametric standards in effect for compressors.

At its present level of development, the machine-building industry needs such constructively normalized standards for a series of machines as would take account of the standard dimensions of interchangeable assemblies, sub-assemblies and parts. There are great differences in the structural shaping of parts for stock reduction gears, for example, produced even today by enterprises in different branches of the machine-building industry which, furthermore, adhere to basic parameters (center-to-center distance) determined by GOST Nos. 2144-43 and 2185-55. The main reason for this is the lack of an adequate number of well worked out standards and inter-industrial norms for individual reduction gear parts and of unified coordination on the basic components of spur gears, housings and shaft settings. In consequence, reduction gears of the same type have housings and flanges whose walls and tops are of different thicknesses. While of identical dimensions, the reduction gear RM-205B put out by the Pavshino factory is somewhat over twice as heavy as the same gear manufactured at the Izhevsk factory.

The reorganization of industrial and construction management, having given rise to an extensive development of raion, interraion and inter-branch cooperation, has brought out with special clarity the lagging supply to branches of industry of corresponding standards and inter-branch part specifications. Although there were over 11 thousand departmental specifications for machinery parts and sub-assemblies and over 20 thousand part specs for technological equipment, in early 1958 there was as yet not one inter-branch part spec (at the present time there are only four).

The Committee on Standards, Measures and Instruments attached to the Council of Ministers of the USSR has worked out a plan under operational conditions for the creation by the leading industrial institutes of a few industry-wide standard parts. However, neither the plan itself nor the methods for working out these specifications give any solution to two problems: what should be the nomenclature for interchangeable assemblies, sub-assemblies and components and what will be the volume of their branch and raion consumption? It is clear that, unless these questions are answered, no order of priority can be established for working out industry-wide standard parts and determining the economic effectiveness of producing them on a mass specialized scale.

The practical solution of this, in our opinion, important national economic problem should be sought along the following lines: the classification of the constituent parts of various types of machines in the branch of industry concerned and the development in such a branch catalogue of a nomenclature for assemblies, sub-assemblies and components of general application; the derivation from these catalogues of a generalized inter-branch nomenclature of interchangeable sub-assemblies and components, which will consequently permit the determination of articles to be produced on a large scale by specialized, cooperating enterprises; a determination of the quantities of standard assemblies, sub-assemblies and parts that can best be turned out by soundly planned specialized production methods.

On the basis of a consolidated catalogue, a nomenclature of assemblies, sub-assemblies and components common to several branches of industry and of the demand for them, the State Planning Committee of the USSR could, in our opinion, work out a state-wide plan for organizing the specialized production of assemblies, sub-assemblies and parts at the appropriate enterprises in optimum volumes on the raion level.

The availability of branch and inter-branch catalogues will enable the various design bureaus and factories to standardize the sub-assemblies and components of new and modified machines over a broad front, thereby encouraging the most progressive tendency in mechanical engineering — the consolidation and extension of continuity in machine construction and in the technology and organization of specialized machinery production.

In view of the importance and urgency of these tasks to the national economy for the attainment of the chief economic goal of the USSR, we believe it is necessary that the various industrial branch institutes be charged to work out, as soon as possible, branch catalogues for assemblies, sub-assemblies and components and to distinguish among them those which are standard for several or all branches of industry.

In our view, the decimal system should be used in the classification of assemblies and parts standard to various branches of industry as has already been done for the construction and road-building machinery industry by the All-Union Scientific Road-Building Machinery Research Institute under the following headings: 1) general norms; 2) chassis, metal structures, bases, frames and their elements; 3) assemblies and components for conveyor equipment — wheels and caterpillars for earth traction, rigid roofing and railing, widely used hoisting machinery elements, including block and tackles, grapples, braking devices, roller, band and elevator conveyors; 4) mechanical hydraulic and pneumatic drives; 5) electric drives, including generators, motors, starters and governors, rectifiers; 6) power plant elements (internal combustion, steam compressor plants, including pipe-feeds and tanks, etc.); 7) assemblies and devices for automatic machinery not covered in headings 4, 5 and 6; assemblies and components of operating stations and control instruments; 9) interchangeable parts, including fasteners, threading, plugs, pins and cams, couplings, brackets, lubricating devices, taps, bolts, indicator pins, springs, etc.; 10) implements and attachments for machinery operation, including assembly tools, tool boxes, locks, covers, servicing equipment.

Each of these classes should be subdivided by the same decimal system into sub-classes and groups and, if further differentiation is necessary, into sub-groups for the classification of forms (types) of assemblies and components.

When carrying out this work, the basic branch institutes should take into account figures on expected demand for, and on the production priorities of the most advanced types among, the assemblies and components classified.

The All-Union Scientific Research Institute for the Normalization of Machinery attached to the Committee of Standards, Measures and Instruments of the USSR Council of Ministers, must take the lead in the standardization of these materials. In carrying out the job of standardizing these materials, this institute should single out the nomenclature of interchangeable sub-assemblies and parts for centralized preparation, should draw up pertinent proposals for the State Planning Committee of the USSR, and to the state planning committees of the republics for the organization of their specialized industries. It would be advisable to work out the nomenclatures of interchangeable sub-assemblies and parts in the following order.

First: components used widely and in bulk quantities in several or all branches of industry such as, for example, fasteners, check rings, bearing separators, lubricating valves, etc.; second: automobile-type tires, chains, expansible pulleys, hydraulic and pneumatic gear drives, part of the electrical starting equipment, classes 6, 8, 9 and 10; third: spur gears, clutch disks, toothed and worm reduction gears, power plant units and class 7; fourth: elements of class 2, sub-groupings under class 3, all of class 4 and all others.

In working out the catalogue, account should be taken of the classifying work already done in electric starter manufacturing, ship building and other branches of the machinery industry, the materials of the international conference in Prague (February, 1957), the work of Prof. D. N. Reshetov, etc.

The All-Union Scientific Research Institute for the Normalization of Machinery must work out standard normals in the same order. While doing so, it must be borne in mind that the classifying numeration may be used as a basis for future product indexing, normals and GOST numbers.

MITROFANOV (Continued From Page 72)

Any part of a machine may be modernized, but best results are obtained from over-all modernization. And, what is more, if the working parts of a machine are modernized, the motor and transmission must be modernized, too. Over-all modernization, in unit and series production applications, increases the productivity of multi-purpose turning lathes, according to available data, 1.4-1.8 times, of turret lathes 1.3-1.5 times, of vertical drilling machines 1.4-2 times, of grinding and polishing machines 1.4-1.7 times, of cantilever-milling machines 1.5-2 times and of gear-cutting machines 1.6-2.2 times. And, in large-scale serial and mass production, over-all modernization is even more effective.

The productivity of equipment, regardless of age, may be hugely improved by the automation of productive processes, since comparatively few units (roughly 6.3 per cent of the total machinery inventory in 1956) are either automatic or semi-automatic. This type of modernization can do a great deal to improve the productive capacity of the machine-building industry exclusive of the construction of new plants.

With the practical implementation of over-all modernization and the most extensive possible automation of equipment, the yearly output of modern, high-output metal-cutting machinery will almost double, and the volume of forge-press production will rise by 50%-60%. This will accelerate the supply to the national economy of modern machine-tool equipment which, in turn, will lead to a considerable speed-up in the rate of technological progress.

E. Pospelova:

On Developing the Meat and Dairy Industry

The theses of Comrade Khrushchev's report to the 21st Congress of the CPSU point out that the principal goal of the seven-year plan for the development of the national economy of the USSR during 1959-1965 is to achieve further powerful advances in all areas of the economy, predominantly on the basis of the growth of heavy industry, and a considerable intensification of the economic potential of the country to ensure a rising standard of living for the people.

The seven-year plan will mark a decisive stage in the contest with the capitalist world when the historical task of catching up with and surpassing the most advanced capitalist countries in per capita production can be fulfilled in practice.

The December, 1958 plenum of the CC CPSU summed up the development of agriculture over the previous five years and decided upon the extent of further farm production growth to be aimed for.

Agriculture in our country has effected unusually rapid advances over the last years. Pursuant to decisions of the September, 1953 and subsequent plenums of the CC CPSU, the Communist Party has taken steps to effect a sharp increase in the output of agricultural produce, including livestock products. This has helped to consolidate the fodder supply and to boost livestock raising. In 1953 the kolkhozes and sovkhozes laid in 32 million tons of silage, and 148 million tons in 1958, including about 100 million tons of corn silage. The kolkhozes and sovkhozes of the Ukraine laid in 15 tons of silage per head of cattle, those of the Stavropol krai — 25 tons, in the Kursk oblast — 34 tons. In many oblasts one and a half to two-year supplies of silage have been stored. Between 1953 and 1958 the number of horned cattle in the country has increased by 14 million head and sheep by 29 million.

The productivity of livestock is increasing along with its numbers; the production of milk, meat and other products is rising. While between 1940 and 1953 the average milk yield remained at exactly the same level, standing in 1953 at merely 1,016 kilograms per forage cow, it has, however, increased considerably during the last few years, reaching 1,858 kgs. in 1957, and roughly 1,900 kgs. in 1958. Thus, the assigned goal of increasing the average milk yield per cow on kolkhozes to not less than 1,700 kgs., set by the January, 1955 plenum of the CC CPSU, was overfulfilled in less than 3 years. In 1957, the sovkhozes obtained an average milk yield per cow of about 2,700 kgs., and they have the task of reaching 3,100 kgs. by 1960. Milk production has risen 50 per cent, and on some kolkhozes and sovkhozes by more than 100 per cent. Meat production (computed from accretions to herds) increased 1.4 times between 1953 and 1957. As a result of the considerable growth in milk and meat production, the plans for State deliveries and purchases are being fulfilled more successfully.

A resolution of the January, 1955 plenum of the CC CPSU provided for an increase of not less than 80 per cent in the volume of State purchases of milk and dairy products between 1954 and 1960. This goal was reached, in fact, within 3 years, and not the 6 years allowed. By 1957, 20.5 million tons of milk were being purchased by the State, against 11.3 million tons in 1954, or more than 80 per cent more.

The task has been set for the forthcoming seven-year period of achieving such a growth in agricultural production as will abundantly supply the food requirements of the population. Milk production is to be increased to 100-105 million tons, or 70-80 per cent. Milk production per 100 hectares of farm land will rise considerably (200-210 quintals) by 1965, and will surpass the current USA production (101 quintals in 1957). State milk purchases are to be raised by 1965 to 40.6 million tons, or a 100 per cent increase over the 1957 figure. Meat production (slaughtered weight) will rise to not less than 16 million tons, or twice the 1958 figure. Each 100 hectares of farm land will yield 32 quintals of meat, which will exceed the current USA yield (29 quintals per 100 hectares of farm land). State meat pruchases will rise to 11.05 million tons, or 120 per cent more than in 1957.

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The growth in the production and State purchase of livestock products will bring about a sharp increase in processing of meat and dairy products by industry, and also the sale of these products to the population. The control figures stipulate an increase in the output of meat products from State processing plants alone to 1,006 thousand tons, or 60 per cent more than in 1958, which will by far exceed the total per capita production of the USA. The production of milk and whole milk products will go up at an especially rapid rate. It is intended to deliver 13.5 million tons of whole milk products (in terms of milk) by 1965, or 125 per cent more than in 1958. Meat processing from State crude meat supplies, including subproducts of category I, will advance to 6.1 million tons, or 2.17 times more than in 1958. In addition, there will be a considerable rise in the volume of milk and meat sales to the population on kolkhoz markets.

Already during the period from 1953 to 1957, the output of milk and whole-milk products had risen 170 per cent — from 1,893 thousand tons in 1953 to 5,209 thousand tons in 1957. Cheese production grew 70 per cent during the same period — from 78 thousand tons to 132 thousand tons. Butter processing by State enterprises rose 70 per cent — from 373 thousand tons to 622 thousand tons. The USSR is now the foremost country in the world in over-all volume of milk and butter production. The processing of meat, sausage and other butcher and dairy products has increased considerably. The consumption structure has improved. The food rations of the population are coming increasingly to consist of products of the highest quality.

In accordance with the seven-year plan for the development of the national economy, it is planned to put into operation about 250 new meat-processing plants, over one thousand milk-processing plants, more than 200 canneries. At existing plants, it is intended to increase the output of food products by more fully utilizing their productive capacities, by uniformly distributing the work load of the individual enterprise over the course of a year, by introducing new technological processes, by mechanizing and automating production, by ensuring a thorough utilization of all raw materials, by improving the yield of finished products, and by reducing losses and diversions of materials to other production purposes.

The most effective means of increasing productive capacities is the supply of technical equipment to enterprises: the installation of continuous production lines, the replacement of existing equipment with more highly productive plant. At the present time, line production is being increasingly and more extensively applied in butter manufacturing; more than one thousand continuous production lines are in operation and more will be installed in course of time. Moving-chain conveyors for meat-processing, mechanical hide-removal equipment, production lines for the treatment of by-products and poultry processing, automatic devices for making pelmeny (Siberian meat dumplings) and many other types of machinery are being installed. Industrial and commercial food refrigeration capacity will be almost tripled during the forthcoming seven-year period.

The construction of new beef-processing plants and a steady build-up in the capacity of existing enterprises will make possible a material increase in the output of the beef-processing industry and also an improvement in its quality. It is well known that the productive capacity of meat and dairy industry enterprises in several raions is too low. For example, the productive-technical base of the meat and dairy industry of the Moldavian SSR is trailing badly behind its growing sources of crude supply. There are not enough refrigerators, there is a lack of new, high-output technological equipment and the meat combinats are weak in productive capacity. A large number of cattle have to be exported for processing beyond the borders of the republic, at considerable expense to the state. Due to the inadequate productive capacity of meat combinats, and of cheese and dairy plants, the enterprises of the meat and dairy industries of the Belorussian SSR, and of the Moscow and Kaluga oblasts have not been able to meet meat, poultry and dairy processing requirements. In Belorussia, the Kherson, Kirovograd and Kemerov oblasts, and in the Stavropol krai, certain warehouses have turned away cattle and poultry for processing. The meat industry enterprises of the Krasnodar krai have proved unequal to their cattle-dressing tasks. The Poltava meat combinat has been inadequate to handle the pork processing work that has been coming to it.

Enterprise construction is making extremely slow progress in several raions. Thus, the Kursk meat combinat was 8 years a-building; the dairy combinat in Ostankino (Moscow) has been under construction for 15 years and is not yet operating at full rated capacity. The construction of new refrigeration plants is being undertaken slowly, as also the expansion of existing plants. Work was begun on the Irkutsk plant in 1954, and it is not expected to be completed before 1959. The refrigeration plant in the city of Zhukovsk, begun in 1954, was scheduled for completion in 1958. The Khladpromstroi trust [Trust for Design and Planning of Construction and Assembly of Cold Storage Installations and Refrigeration Plants. Transl.], which is engaged in work to expand cold storage plant No. 7 in Moscow, has been scattering its funds and manpower on several objectives at the same time and, as a result, the completion of the expansion work has dragged on. Inadequate cold storage capacity is a hindrance to increased meat product output.

Substantial inadequacies also arise in the planning of additional productive capacities. The rise of capacity in, for example, the dairy industry, should correspond to the rate of growth of milk production in agriculture. However, while State milk purchases rose by more than 3 million tons yearly during 1956-1957, the capacities of dairy industry enterprises were increased in 1957 by only 8 thousand additional tons.

It is no accident that the quality of dairy products has deteriorated. Overloading the milk processing plants makes it hard to organize the work correctly and weakens quality control. The 1957 plan for top-grade butter and cheese production was not fulfilled, and fewer high quality products were supplied than during the preceding year.

In pre-Revolutionary Russia, the dairy processing industry consumed 9-10 per cent of the gross milk yield. In 1940 the enterprises of the State dairy industry converted 19 per cent of the gross milk yield. The importance of the dairy processing industry rose during the post-war years and the consumption of raw milk in this sector reached 37.5 per cent of the total yield in 1957. In respect of the realtive domestic importance of its dairy industry, the Soviet Union is catching up with the capitalist countries whose dairy industries are most highly developed. Thus, during 1948-1950, the milk processing industry in the USA consumed 48.5-50 per cent of the total raw milk yield, in France — 47-52 per cent, and in Denmark — 77-82 per cent. However, it is the city populations which are currently receiving the bulk of the whole-milk products processed at State industrial enterprises. The rural population is as yet being inadequately supplied with butter and cheese from processing plants (this sector is mainly supplied by local processing). In 1956, 10.9 thousand tons of butter and 560 tons of cheese were processed locally, or 2 and 0.5 per cent respectively of the production by enterprises of State industry. The industrial processing of livestock products must be increased a great deal more to supply not only the urban, but the rural population as well.

Dairy products of industrial manufacture are of higher quality than those made by individual home producers. The industrial manufacture of these products right on the kolkhoz will not only make possible a sizeable reduction in the ratio of raw material to finished unit product, but will also cut down on waste and transportation costs, and will help to release kolkhoz women from burdensome domestic tasks for social production.

A few kolkhozes have their own small milk processing plants. The number of such plants could be substantially increased. The theses of Comrade Khrushchev's report to the 21st Congress of the CPSU point up the need to accelerate the construction by kolkhozes, sovkhozes and consumer cooperatives themselves of enterprises for the manufacture of sausage and semi-finished meat products, butter, cheese, curds and other products. Parallel with the construction of enterprises on individual kolkhozes to process farm produce, the merging on a more extensive scale of the funds of several kolkhozes for the construction of inter-kolkhoz factories is also recommended. In this way larger enterprises could be built and provided with modern production techniques and technology.

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Grave defects are also to be found in the geographical distribution of enterprises of the meat and dairy industry. It still happens that cattle products have to be transported over long distances; the development of the meat and dairy branches of industry is lagging in some raions of the country. Thus, while the heavy industry and urban population of the Eastern regions of the country have been growing rapidly, the expansion of the meat processing industry is there trailing further behind the rising needs of the population than anywhere else. If we take the 1956 level of per-capita industrial dairy processing for the USSR as a whole as 100 per cent, then, for individual regions this figure was: Northern Caucasus — 124 per cent, Western Siberia — 175, the West — 150, the South — 120, the Center — 95, Eastern Siberia — 79, Kazakhstan and Central Asia — 58 and the Far East — 32 per cent.

The processing in 1956 of milk, and of whole-milk products in terms of raw milk, per capita of the urban population, was also extremely uneven throughout the various economic regions and ran far in the rear in the Eastern regions of the country. While the average USSR per capita annual production of milk and whole-milk products was 47 kilograms, the figures for the various regions were as follows: the North — 33 kg., the North-West — 72, the Center — 63, the Volga basin — 43, Northern Caucasus — 59, the Urals — 42, Western Siberia — 50, Eastern Siberia — 28, the Far East — 15.5, Kazakhstan and Central Asia — 19.5, the Transcaucasus — 15, the South — 46 and the West — 53 kgs.

The capacities of several urban dairy plants in the Eastern regions of the country, even working two shifts, are insufficient to supply all the whole-milk products needed by the populations of their cities. Thus, for example, the Khabarovsk dairy plant is able to supply an average of 0.1 kg. of milk and whole-milk products (in terms of milk) per day for each inhabitant of the city. The Novosibirsk dairy plant is equipped to deliver 0.13 kg. of milk and whole-milk products per day to each resident of the city. The capacity of the dairy plant in Vladivostok is equivalent to less than 0.1 kg. of milk and whole-milk products for each townsman. All this testifies to the indispensability of accelerating the development of the whole-milk industry, especially in the Eastern regions of the country. There must be a substantial expansion of urban dairy plant capacities in the raions of the North, the Center, the Volga basin, the Urals, Western and Eastern Siberia, the Far East, Kazakhstan, Central Asia and the South.

The cheese-making industry still considerably lags behind the needs of the country. The Institute of Nutrition of the Academy of Medical Sciences has worked out scientific norms stipulating a per capita consumption of 5.8 kgs. of cheese per year. The USA produces over 600 thousand tons of cheese annually, or about 3.7 kgs. per head of population. During 1957 our State industrial enterprises produced 132 thousand tons, i.e., less than 1 kg. per head of population.

The expansion of hard cheese processing would involve considerable capital outlays. A more substantial growth in cheese production at less capital expense could be achieved by increasing the processing of quickly ripening and then re-melted cheeses.

There are still great defects in the distribution of the enterprises of the cheese-making industry, fundamental improvements in this regard notwithstanding. The following figures describe the 1956 per capita cheese production by economic regions: the North — 0.8 kgs., the North-West — 1.1, the Center — 0.8, the Volga basin — 0.6, Northern Caucasus — 1.2, the Urals — 0.25, Western Siberia — 1, Eastern Siberia — 0.3, Kazakhstan and Central Asia — 0.1, the Transcaucasus — 1, the South — 0.4, and the West — 0.9 kgs.

Calculations show that there are adequate supplies of cheese-making raw materials in all regions of the country but the Far East. However, as a result of the defective planning and lagging development of this branch of industry in certain regions, considerable quantities of cheese are shipped over long distances. This is especially true in the cases of the Central, Ural and Eastern Siberian regions.

By-products of butter and cheese processing — skimmed milk and buttermilk, sometimes wrongly referred to as "waste products," are of great nutritional value. Inadequate use is still made of these by-products, and the problem of the distribution of enterprises to process them has not been solved. They will be available in increasing quantities in course of time and it is now time to think of organizing rational ways of processing them.

There is no unified plan for the distribution of enterprises of the meat and dairy industry over a long period of time (10-15 years), which sometimes gives rise to miscalculations in the designing and building of these enterprises.

Commercial facilities do not correspond to the growing needs of the population or to industrial capacity. Even in Moscow many stores are without cold storage chambers. During July and August, 1957, the Moscow dairy plants could have delivered 1,200 tons of milk and 150 tons of sour cream for sale to the population. But, due to inadequate store facilities, the trade organizations were unable to handle such a volume and retailed only 945 tons of milk and 73 tons of sour cream.

At the December 1958 plenum of the CC CPSU, Comrade Khrushchev said that the real struggle to expand the livestock industry has only begun, and that this problem may be regarded as completely solved only when the Soviet people are abundantly provided with high-quality cattle food products and industry with the necessary raw materials for the manufacture of clothing, footwear and other goods.

The seven-year plan of development of the national economy poses important tasks to those branches of industry that process agricultural raw materials. Their successful fulfillment will contribute to raising the standard of living of the Soviet people.

A. Osorgin:

Capital Investments in Transportation Must Be Increased

During the current seven-year period it is intended not only to fulfill tasks relating to production volume, but also to prepare all areas of the economy for further rapid advances.

We inherited a quite developed rail transportation plant from the Tsarist regime, but a meager scale of per capita production. In pre-Revolutionary Russia, transportation was the largest recipient of basic funds. In contrast, roughly 13 per cent of all capital outlays under the first, second and fourth five-year plans was directed to railway transport.

During the current seven-year period it is contemplated to pour 110-115 billion rubles into railway transportation development, which is 5.5 per cent of the total capital investment in the national economy as a whole. Thus, the proportion of railway investments will be halved during 1959-1965.

The work of the railways has become more intensified during recent years. While our country is moving into first place in the world in the volume of its production output, the scale of basic funds for transportation has not only declined to less than those available for industry, but the quantitative growth of these funds is also much slower. The lack of transportation facilities is holding back the development of the productive forces of some regions. As a consequence of the overloading of some main lines, roundabout routes have to be used, lengthening the haulage runs and complicating the operation of the railroad network.

Calculations of the Institute of Economics of the Academy of Sciences of the Kazakh SSR show that the railroad network of the republic is in no position, as it now stands, to ensure a reduction of the cost of transportation to the level required, that the transport needs of the national economy are far from being fully met, and that the average transporting and hauling distance is roughly 26 kilometers greater than normal. In 1965, with a haulage volume of about 75 million tons and a cost of 60 kopeks per kilometer-ton for haulage over disorganized lines, the cost to the national economy of the transportation of State goods will climb 1.2 billion rubles. Transportation costs will be reduced to a minimum when 9 thousand additional kilometers of track are added to the railroad network, which will cost about 9 billion rubles. This investment would pay for itself in seven and a half years.

The seven-year plan regards the reinforcement of the existing railway network as basic to the development of the railroad economy. Several most important jobs will have to be done: the railway lines will have to be electrified, they will have to be switched over to diesel-electric traction, second tracks must be laid, overhead track structures must be improved, and automatic blocking systems will have to be introduced. It is advisable to plan for the insertion on main lines of two-way bypassing sidings, in view of the alternative possibility of laying new relief routes which may be more profitable to operate. At the same time, in our view, there should be an increase between 1959 and 1965 in the volume of new railway construction.

Thought should also be given to the acceleration of construction work as much as possible. For example, the Mointy-Chu line took 8 years to build, and the Akmolinsk-Pavlodar line took just as long (not including the period when it was temporarily closed). The terminal stretch of the Chardzou-Kungrad line has not yet been opened for continuous operation, and construction is proceeding slowly on the Guryev-Astrakhan line.

The cost of railway construction is increased by dragging it out. Additional expenses comprise about 25 per cent of estimates for new railway construction meant to be completed in three years time. Yearly expenses for the upkeep of administrative staffs and other expenditures bearing on job-completion time (maintenance of temporary structures, etc.), go as high as 10 per cent of estimated construction costs. Hence, when the job-completion time is increased from 3 to 8 years, construction costs go up roughly 50 per cent.

The principal reason for the protraction of railway construction work is to be found in incorrect financing and material and technical supply practices. On the one hand, allocations for new railroad construction have been small over several recent years, which was due to the need for first reinforcing the existing network. Moreover, allowance was made for a weak development of the network and for a small load. Unless the existing network was reinforced, new lines would not be able to function normally. But now the situation has changed: our railway system has the greatest capacity and hauls the greatest loads in the world. However, the staff of the State Planning Committee of the USSR lacks the boldness to revise the share in capital investments planned for the development of transportation. On the other hand, almost all the republics have advanced to the State Planning Committee of the USSR sound reasons why they should get new railway construction.

In several cases, the Gosplan USSR finds some sort of "middle course": it adds new construction objectives to the list but does not, for all that, raise the general allocation limit, preferring to cut the size of allocations to each project, thereby postponing its final completion. The result of this has been that an irrational system has come into being of laying main line routes in an excessively piecemea fashion, so that the full benefit of the investment is put off indefinitely.

The shortage of funds for allocation to new railway construction has resulted in the frequent refusal of the Ministry of Railroads and of the Ministry of Transport Construction to lay a series of new main-line routes, attempting to shift this job on to industry. Industrial organizations build such railroads, but in the pursuit of narrow, departmental goals. They become more difficult to operate after they have been handed over for administration by the Ministry of Railroads.

The question arises: Will materials be available for the necessary increase in the volume of new railway construction? This relates first of all to roadbeds. The plan envisages the replacement over seven years of 70 thousand kilometers of roadbed. Rails that are several years old may be used during the first years of operation of new lines. Ready-made wattles taken from old lines may be placed on new track over short distances; this will reduce construction costs considerably.

The plan stipulates a mass change-over of railways currently in operation to diesel-electric traction. New types of steam locomotives (of series "L," for example), powerful enough and adapted to work on light rails, should be allocated to new routes.

It seems to us that provision should be made for the construction of two additional new railways in Kazakhstan.

Traffic loads will rise considerably by 1965 on the Semipalatinsk-Chu stretch of the Turkestan-Siberian railway, and if traffic continues on a single-track basis, the line will be unable to meet all the requirements of the national economy. In this regard, in our opinion, a relief route should be laid from Semipalatinsk, through Karagaily to Mointy. This will afford a 100-kilometer reduction in the distance to be covered by through loads. The Karagaily-Mointy stretch is ndispensable to the development of the more important ndustries of Central Kazakhstan.

The Tentek coal deposits of the Karaganda basin — located on the direct route between Temir-Tau and Atasu, will in ime supply up to 8 million tons of coal per year to the combine there. It does not seem possible that this large volume of coal could be handled on the railroad sidings of the Karaganda terminal. We therefore prppose the laying of a new, lirect route between Temir-Tau and Atasy, over which both coal and ore will be hauled. Computations indicate that the dditional expense, in comparison with the construction of second track along the existing routes, would pay for itelf in less than two years.

The scale of allocations foreseen by the seven-year plan or highway construction and the development of autoransport seems inadequate to us.

Several republics, including Kazakhstan, do not give high-

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of Kazakhstan's roads are hard-topped. But even today the planning agencies envisage a yearly construction of not more than 300 kilometers of road, whereas available road-building stations are equipped to lay 3 thousand kilometers of hard-topped road a year. No funds or materials have been allocated for three years for experimental road-construction by stabilizing the soil with cement, although this would result in a one-half to two-thirds reduction in road-building costs.

Calculations made by the Institute of Economics of the Kazakh Academy of Sciences (Alma-Ata) and by the All-Union Trust for the Research, Design and Planning of Roads and Road Structures (Moscow) arrive at almost the same figures: a total of 36 thousand kilometers of highways must be laid within the borders of the republic. Not less than 50 per cent of these roads should be built during the current seven-year period.

A few words on the automotive economy of Kazakhstan. As late as 1953 the maintenance plant was adequate to the needs of roughly half the auto-transport facilities of the republic. The development of virgin lands brought about a near tripling of the automotive vehicle stock of Kazakhstan, but the capacity of auto-maintenance enterprises rose only 1 per cent during four years. This servicing base is now in a position to satisfy the requirements of automotive transportation with only 20 per cent effectiveness. It is indispensable that the construction of auto-maintenance enterprises be intensified.

Kazakhstan lacks an auto-trailer factory of its own, and so home-made auto-trailers are used, which cost more and are of inferior workmanship. The utilization of multiple-trailer lorry trains represents a reliable means of raising the quality of the performance of the automotive stock on our roads, which are not adapted to heavy vertical loads. The seven-year plan should provide for the construction of an auto-trailer factory that could later on be converted to an automobile factory, which Kazakhstan needs as one of the largest consumers of automotive industry products.

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I. Dmitrashko:

The Development of Forms of Remuneration in Collective Farms

Unlimited areas for development of creative initiative of collective farmers and the growth of all branches of agriculture are opened by the decisions of the party and the government concerning the reorganization of the MTS and the further development of the structure of collective farming. Having received the mechanized equipment and trying to perfect the organization of work in agriculture, the collective farms bring into action new reserves which strengthen the social economy with the aim to achieve significant increases in production in both cultivation and livestock raising. The abrogation of compulsory delivery quotas and of the payment in kind for the MTS services, the newly created conditions for storing farm produce, and the new prices set for farm produce, all contribute toward sharp increases in the output of marketable products and the rise in the cash income of all collective farms.

The December 1958 plenary session of the Soviet Union's Communist Party's Central Committee emphasized once again the great significance for the development of collective farming borne by the increase in labor productivity and by the reduction of labor required and the costs of production per unit of output. In the seven-year period labor productivity in collective farms will be nearly doubled. Each collective farm must secure not only as high output as possible from the land allotted to it, but must also manage the farm as economically as possible and make judicious use of all possibilities while strictly observing the regime of economy. Steadfast decreases in the costs of production and further improvement in the workers' standard of living will be achieved precisely on these grounds.

An enormous part will be played in these circumstances by the means used to strengthen the collective farmers' material interest in the growth of the social wealth on the basis of perfecting the forms of remuneration for work.

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The system of remuneration was changing and constantly improving throughout the entire period of development of collective farming. New economic conditions in which collective farming finds itself call for development of new and more progressive forms of payment for work in it. Collective farms have progressed from the system of distribution of earnings per capita, by rations, etc., in the early phases of collectivization, on to calculating work and distributing the earnings by the working-day.

The most important characteristic in the system of remuneration of collective farmers is that, in this case, the time at which work is supplied does not coincide with the time at which it is paid for. The farm work goes on continuously and therefore, it would seem, it should be accounted for systematically throughout the year. However, the fact is that the amount of the collective farm's remuneration found can be established in final terms only at the end of the year, after all farm work has been completed and the outcome of the farm's business operations determined. It is in connection with this that there arose the need for accounting for the work supplied in working-days first, and pay for it later. In a given phase of the evolution of the system of collective farming the working-day appeared as the only possible conditional unit of work supplied in the collective economy, and as the only measure for the collective farmer's income. This method has played an importan part in regulating the accounting of the amount of labor supplied and distributing the earnings in accordance with this amount.

As a system, the working-day has undergone serious changes in its content. From a simple unit of one work day, irrespective of the amount and quality of the work supplied, it became a unit for calculating a fixed amount and quality of work irrespective of the amount of time required for its completion. The individual collective farmer's labor is expres in the working-day as a part of the aggregate collective wo For this reason, it has a social valuation. The principle of equality in socialism is expressed in the working-day system. This frees all working people from exploitation, and establishes each individual's obligation to work as well as his right to be paid for it according to the amount and quality of the work supplied by him. The working-day system assures equality in remuneration of men's and women' work. In this sense the working-day system expresses the socialist relationship in production among collective farme

At the same time, it would be erroneous to view the working-day system as a measure of collective farmers' labor and consumption. Since the unit of a working-day does not contain in itself a tangible measure of either the volume of work or time, it cannot express objectively the amount of labor required to produce a given product. Furthermore, th working-day is not the only criterion for distribution of earnings among collective farmers. In addition to the working-day, the collective farmers' work is now measured, ev within a collective farm, by payments in cash and kind as well. Multiple forms of supplementary remuneration (granting of a young animal as a bonus for work in livestock bree ing, development of livestock or good care for the animals; supplementary remuneration in cash and in kind for the par of production in excess of the planned output; remuneration against a fixed part of gross output; etc.) often in fact lead to the situation where these remunerations exceed the collective farmer's earnings stemming from the accrual of working-days. In certain collective farms the specific part of the cash payments made to collective farmers apart from the remuneration per working-day, amounts to more than one-half of the over-all payments made to collective farmers. In view of this the collective farmers' requirements must not be estimated at this time exclusively on the groun of the number of working-days furnished, or by the combin value of payments made in cash and in kind for each working-day.

Inadequacies in the system of calculating the amount of work supplied and its remuneration by the working-day have become apparent in unequivocal terms in the new stage of development of collective farming.

In the leading collective farms, where all aspects of economic activity are controlled directly by the ruble, the existence of the working-day system no longer contributes to the growth and strengthening of socialized economy. The working-day system, with its payments in kind, produces furthermore a slowing effect upon further development of production, not to speak of that it reduces the ratio between commodity production and total output in socialized economy. The collective farmer does not see in the working-day the real measure of his earnings, and the government cannot see the relationship between the costs of production and the rentability of individual branches of farming. The following is what the chairman of the collective farm "Stalin" in the Luhovitsky region of the Moscow province, F. Generalov, twice awarded the medal of the Hero of Socialist Labor, writes on this subject: "Working actually in farming, and having been engaged intensely for a number of years in perfecting the system of accounting for and remunerating of the collective farmers' labor in our branch of agriculture, I cannot close my eyes to the fact that regardless of how differentiated was our approach to the remuneration for a given kind of work, regardless of what kind of success we achieved in developing a progressive system of advance payments or in changing to cash remuneration, the working-day remains for all of us a kind of a blind spot, a mysterious magic rod whose value is everywhere estimated most approximately, and in most cases merely by sight."*

The distribution of earnings, calculated by the working-day, at the end of the economic year creates a wide gulf between the time when work had been supplied, and the time when it is paid for. This reduces the collective farmer's nterest in the results of his work, and is detrimental to abor discipline. In the recent past, when the collective armers' work was paid mainly in kind and by farm produce which were on the whole still distributed at the end of the year, this discrepancy produced only a limited effect on the collective farmers' productivity. When paid in kind per accrued working-days, the collective farmers do not know until the end of the year the final amount of their monetary earnings. This forces them to develop their individual economies and sell their produce on the market for surplus arm-produce in order to provide the cash income for the eeds of their families during the year.

The distribution of produce in payment for accrued working-days is conducive to the creation of surplus stocks among many collective farmers, and the farmers must spend a considerable portion of their working time in order o convert these stocks into cash. Their income in this case depends upon the prices which are formed on the market for the products that are being sold. Along with this, he distribution of produce allotted as payment in kind for accrued working-days, and including such goods as grain, fresh vegetables, oil seed, etc., forces the collective farmer to waste a great deal of his time in order to transform hese products into flour, groats, fats, butter, and pickle nd can the vegetables.

The decision of the Soviet Union's Communist Party's entral Committee and of the USSR's Council of Ministers "Concerning the Regulations in Farming and Further Development of Collective Farmers' Initiative in the Organization of Production in Collective Farming and Management of Farm Economy," enabled collective farms to seek ew ways for solving in principle the questions concerning he distribution of collective revenue and the remuneration f collective farmers' work, while taking into consideration specific economic conditions. In general, the method which has been widely applied is that of granting the monthly advance payments. This represents remuneration by the working-day by distribution of a portion of produce and cash payments not at the end of the year, but monthly. The significance of monthly advances, and especially of the advances in cash, is enormous. The continuous flow of earnings from collective economy transforms it into the main source of the collective farmer's daily income. Work in collective farms becomes, to a constantly increasing degree, the main condition for securing a continuity in personal income. The collective farmer can see not at the end of the year, but each month the exact amount of his earnings from the collective economy. This increases his interest in maintaining high output in his work throughout the year.

As a rule, all economic indices are higher in those collective farms which have introduced the system of regular monthly advance payments as compared with the indices in previous years; they are also higher than the indices in collective farms with equal capacity of production, but without the system of monthly advance payments. In these collective farms the activity of work rises sharply, the collective farmers' skills are improving, and the role played by the working-day system acquires an increased importance.

A great many collective farms, basing themselves on the experience with the monthly advance payments which increase both the farm's gross output and its monetary revenue, are now making transition to the system of firmly guaranteed monthly remuneration for the collective farmers' work.

By its influence on productivity, the guaranteed remuneration of work resembles wages. It creates a firm conviction among collective farmers that their work will be paid for in full and in accordance with rates fixed in advance. The experience in collective farms which have applied this system of guaranteed remuneration shows the progressive nature of this form of payment, since it contributes in many ways toward the increase in the collective farmer's material interest in development of social economy in the collective farm. In the result of this form of remuneration the work-activity in the collective farm increases, the output of farm produce grows, and labor productivity becomes higher.

The guaranteed remuneration of work is a new phenomenon in the life of collective farms. It is a product of the growth of their collective wealth. Certain economists have believed that this form of remuneration of work in collective farms is impossible because it allegedly would be contradictory to the nature of collective farming, and therefore would inevitably lead to disorganization in production in collective farms. These views are a result of underestimating the development capacities in collective farming. The matter is, of course, not in the nature of collective farms, and not in the specific characteristics of the collective and cooperative form of ownership, but in the over-all level of the collective farms' economic development and the level of development of the state as a whole; it is also in the degree of availability of goods and money in one or another collective farm, and their apportionment for distribution according to the working-day system.

The working-day acquires a new quality within the system of guaranteed monetary remuneration; while it acquires a tangible monetary content, it loses somewhat of its significance along with it. In the collective farm "Kolos," for example, which is located in the Zagorsky district of the province of Moscow, the guaranteed remuneration per working-day amounts to 12 rubles. Assuming that in the operations of mowing hay the collective farmer receives one-and-a-half working-days for completing his daily

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production norm, he would receive 18 rubles for his work at the end of the month. Of course, this production norm could be fixed directly at 18 rubles, and the working-day system by-passed. It is therefore obvious that fixed monthly advances and the fully guaranteed remuneration of the working-day, represent a transitional form toward monetary remuneration without the working-day accounting in collective farms. Thereby the working-day as the unit for accounting the supplied work is conditioned by a determined level of economic development in the collective farms, and is the only possible and indispensable means for distribution of revenue among the members of the collective only as long as the level of development of social economy does not create conditions for guaranteed remuneration of the collective farms' work.

The working-day system was born at a time when the collective farms were economically weak and their revenue was mainly in natural economy. Since cash revenues were very limited, the payment in kind prevailed in the remuneration of collective farmers. Today this is a different matter. In the result of the measures taken toward strengthening collective farming and implemented by the Communist Party and the Soviet government, and including among them the raise in the fixed level of purchasing prices for a great many farm products, and the changes in the methods of agricultural planning, the collective farms have become large economies with many branches and high gross output. Their social economy has become strong and has acquired financial stability. The monetary revenue of collective farms has increased several times, particularly in recent years. Only for the products delivered and sold to the state and the cooperative network, collective farms and collective farmers have received the sum of 65 billion rubles in 1957 above their receipts for 1952. The 1958 monetary revenues of collective farms are in excess of 135 billion rubles, which is 40 billion rubles above the 1957 total. The collective farms' monetary revenue in 1959 will amount to 147-150 billion rubles. The role of the monetary payments is intensified not only in the exchange of goods and produce between the city and the village, but also within the collective farms. The growth of cash receipts in collective farms has changed the structure of social income and the relationship between the payment in cash and the payment in kind of the collective farmers' work. Cash remunerations prevail at the present, although there has been an increase in absolute terms in the payments in kind made to collective farmers. It is these circumstances which contain the objective conditions for the transition from the system of remuneration of work by the working-day, to the more advanced form which is the monetary remuneration of the collective farmers' work without the accrual of working-days.

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The opinion that remuneration of work in collective farms is impossible without the working-day system was widespread in economic literature until recently. The authors of this kind of assertion usually claim that the working-day is a specific economic category belonging to collective farming and stemming from the cooperative and collective form of ownership. In their view, monetary remuneration of the collective farmers' work is erroneous, as it shows both a lack of understanding for and ignores the nature of the collective farms as voluntary cooperative enterprises. Is it possible to draw conclusions about the impossibility of monetary remunerations of the collective farmers' work without the working-day, from the fact that collective farms are cooperative enterprises? Is it that we have only a few cooperative enterprises in commerce and industry in which the working-day system is non-existent? In the industrial cooperative enterprises the work is, of course, remunerated and the members paid, according to fixed monetary wage rates. The portion of the revenue which remains in the enterprises after the payments to social funds have been made, is distributed proportionally among the enterprise's members according to the part of the work supplied in collective production. In this sense, no distinction can be made between collective farms and industrial enterprises.

A great many collective farms have already made the change to the system of monetary remuneration. These farms are in the federal republics of the Ukraine, Tadzhikist and Estonia; in the Krasnodar region; in the provinces of Moscow, Kalinin and Leningrad; and in many other areas of the country. The essence of this system is that all production norms for output in given operations, or units of realized production, are accounted for in monetary terms, and not by working-day. Each collective farmer is credited with a fixed sum of money for a fixed amount of work; the sum of money in question represents either full or part payment for supplied labor. This form of remuneration of work is understandable and acceptable to collective farmers as it furnishes them with a tangible evidence of the actual amount of their earnings. The collective farmers' earnings accrued at fixed rates in the course of a month, are paid at the end of the month without considering the final results of the collective farm's economic activity as shown at the end of the year.

The advantages of the system of monetary remuneration in collective farms are obvious enough. This form of remuneration allows for strict financial control, as well as improved planning of the relationship between the accumulation funds and the funds of collective and individual consumption, as related to the achieved level of labor productivity in collective production. By accepting the system of monetary remuneration of work the collective farm places under reliable ruble-control the most important aspect of social economy which is the utilization of labor. Along with this the system of monetary remuneration of the collective farmers' work permits measuring the amount of labor supplied by them as shown in monetary terms, and entering this expenditure in the cost of production. This automaticall removes one of the gravest inadequacies in the collective farming accounting which at the present renders difficult the calculation of production costs.

Along with the transition to monetary remuneration, the collective farms establish at the same time the guaranteed sales to collective farmers of farm produce and fodder for their individually owned animals. While receiving regularly the monetary payment for their work, the collective farmer are enabled to purchase from the collective farm those amounts of produce, and that quality, which will fully supply their individual demand. This frees them of the concern about selling their own surplus produce on the market, and they thereby acquire additional time for work in the collective economy, for learning and for rest. Development of subsidiary enterprises in collective farms enables them to sell to collective farmers such products as bakery goods, flour, groats, fats, processed vegetables, meat, etc. The availability of these products for sale will greatly facilitate the housework of the women collective farmers.

In this way, the system of monetary remuneration of work becomes conducive to a fuller combination of mutual interes of the state, the collective farms and individual collective farmers. The entire output thus becomes commodity production, and as the monetary income increases so does also the sum of allocations to the prime funds. The accounting for and the remuneration of work become simplified, while the collective farmer being paid in cash purchases produce in the amounts not greater than required for his family. As the entire production of a collective farm, with the exception of that part which is consumed within the economy, becomes commodity production and thereby acquires the monetary expression of its value, and as labor is paid by the system of monetary accounting, the cost of production can be measured by a single monetary index expressing firm comparative prices. This in turn permits the introduction of economic accounting in all branches and sections of the collective farm, and renders more effective the struggle for economies of both financial and material means. The new system of remuneration permits easy surveying of rentability of separate branches and units of production; the continuous control established thereby permits early disclosure of causes for inadequacies and timely measures for their removal can be taken.

The system of monetary remuneration of work assures an even participation of collective farmers in work. In the system of accounting for work by the working-day, there is a noticeable decrease, especially in the years of below average harvest, of both the work-activity and the labor discipline of the collective farmers; the usual result is that the autumnal farm work is either procrastinated, or not completed at all. This serious inadequacy in collective farming is removed by the introduction of the system of monetary remuneration of labor. On the other hand, the experience in the collective farms which have transferred to the system of monetary remuneration without accounting by the working-day, has shown that the monetary crediting rates cannot be analogous or the jobs in either different branches of the farm economy, or as accounted by units of work or by output. These rates must be fixed in relation to the actual economic possibilities in each collective farm.

Along with the monthly remuneration paid according to irmly fixed rates, the collective farmers receive for their ndividual consumption also a portion of the economy's net revenue divided among them in proportion to their individual monetary earnings. This increases the individual collec-ive farmer's material interest in the growth of social wealth, because the chances for increased earnings from istribution of the collective farm's net revenue grow in proportion with the increase in the farm's production and with the growth in labor productivity. The volume of the collective farmers' fund for personal consumption is, there-ore, greatly dependent on economical labor. The more ef-iciently and economically is labor used, the lesser will be he expenditures for remuneration. This in turn creates con-itions for channelling larger sums of money for strengthen-ng and developing collective economy. If, on the other hand, here is an unskillful use of labor, then the inevitable result f it is in the overdraft of the fund for remuneration of collective farmers' work. In this case the overall allocations o the social funds decrease, and the general effect of it can e detrimental to the development of the social economy as whole.

The necessity of fixing the obligatory minimum number of orking-days for each collective farmer disappears with ransition to the monetary form of remuneration of work. his new system of accounting for and remunerating of work eplaces the variety of forms of supplementary payments nd creates a number of factors encouraging and stimulating he collective farmer to improve his work. Among these ctors are the right to paid vacations for the farmers who ave accrued a required number of check-ins for work, the ayment of relief and old age pensions calculated on the round of the farmer's average annual earnings, assistance in ome building, etc. Connected with this is the necessity to eep records of the amount of time spent at work, the completion of individual farmer's production norms, and to improve the efficiency in the study of conditions of work and of estimating production norms in all branches and sections of a collective economy.

An important economic effect is produced by a firm introduction of the system of monetary remuneration. In the very first year of monetary remuneration in the collective farm "Moscow" in the October district of the Tadzhik Soviet Socialist Republic, the cost of production per centner of cotton decreased 21.5%. By this decrease alone the collective farm in question saved 1,389,000 rubles. Along with it the cost of production per centner of wool decreased 50%. In the collective farm "Bolshevik" in the Shostkino district of the Sumskaia province, the system of monetary remuneration without accounting by working-day was first introduced in 1957. The results became immediately apparent. The average percentage of completion of production norms in the field work increased 10% in 1957, as compared with 1956; and in the field of truck farming this increase amounted to 30%. The overall volume of gross output per man-day of work furnished increased 15% within one year. If the 1956 product (in purchasing prices) per able-bodied collective farmer amounted to 15,189 rubles, this value increased already in 1957 to 18,055 rubles, while labor productivity increased 18.6%. Along with this there was recorded a significant decrease in the expenditure of labor and material means per unit of production. The cost of production per centner of grain in this collective farm in 1957 was 39 rubles, as against 76 rubles in 1956; the decrease in the cost of production of sugar beet was from 22 rubles to 9 rubles; production costs for milk went from 162 rubles to 76 rubles; the production costs per centner of meat went down 40 rubles; etc. Data from a great many collective farms indicate the high effectiveness of monetary remuneration in respect to the growth of the collective farmer's material interest and their labor productivity. So, for example, in the collective farm "Bolshevik" in the Gorodskoi district of the Khmelnitskaia province, the 1957 production plan for sugar beet was completed in 19 days, whereas in 1958, following the transfer to the system of monetary remuneration, this plan was completed in 11 days. In this farm the grain harvest was completed in 18 days, and the bean harvest in 10 days.

The transition to the monetary form of remuneration of work presupposes a fundamental change in the existing pattern of planning in the collective farm production. The currently prevailing forms of planning in collective farms have serious inadequacies. They fail to provide measuring units for calculation of production costs, while the indices for production and finances are calculated in general for the year as a whole and do not provide data for surveys of separate time periods within the year. The new system of planning determines monthly indices for production and financial activity in collective farms and permits adequate estimates of the monthly gross output — which is the source of monetary receipts — as well as estimates of expenditures of labor and material means. These indices disclose the seasonal differences between expenditures and earnings, and permit tracing the sources of differences in question. The new form of planning in collective farming eliminates the lack of personal responsibility for economic and financial activity on the part of both the management of the farm economy, and of the persons in charge of its individual branches. Before each branch a well-defined production and financial objective is set up; the remuneration of work of the managers and collective farmers is dependent upon the achieving of these objectives.

The growth of social wealth and transition to the system of monetary remuneration of collective farmers' work permit the introduction of entirely new regulations into the statutes of agricultural administration as far as improvement of the collective farmers' standard of living and social security are concerned. New regulations may include provisions for paid vacations and the old age and disability pensions for collective farmers; the right of the workers whose productivity is leading to free travel to rest homes and sanatoriums; the preservation of the collective farmer's average income during his illness; free care for children in collective farm nurseries and kindergartens; the development of the collective farm funds for loans for home building by collective farmers; etc.

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The system of monetary remuneration without accounting by the working-day is in no way an accidental occurrence in the life of collective farming. It arrives as a natural replacement for the system of distribution of revenue in kind, as economic conditions are changing through the development of collective production. Along with the factors mentioned above, of great importance to the strengthening and development of this form of remuneration are the new government purchasing prices for the collective farms' produce. These prices are stable (in the years of normal harvest), as well as flexible in the case of extremely good or extremely bad harvest years. First of all, these price rates are based on the cost of production in the state-owned farms located in corresponding economic and climatic areas. In the second place, the assistance extended to collective farms compensates for the normal production costs and provides for accumulations for development irrespective of prevailing climatic conditions. The revenue of the collective farms is consequently guaranteed within certain limits by the state and insured against the weather conditions. This creates the possibility to establish the guaranteed monetary remuneration of the collective farmers' work which is similar to the wages of workers in the state-owned farms in the corresponding climatic and economic areas.

Therefore the remuneration of the collective farmers' work by direct monetary accounting based on production norms and without the accrual of the working-days, is the form which most closely corresponds to the socialist principle of payment according to work in the new phase of development of collective farming. This is the logical conclusion for all earlier searching for more perfected forms of incentive to collective farmers for further increases in the output of farm produce.

The transition to the monetary remuneration of work in collective farming is in no way a mere substituting of the working-day accounting by cash evaluation of work. This transition can be successful in collective farms which have their social economy sufficiently developed so as to assure the stability of financial revenue, and which have a financial system well organized and with sufficient monetary reserves assuring the regularity of cash payments to collective farmers throughout the year. As for the economically weak collective farms, they will be able to achieve the conditions necessary for the transition to the system of monetary remuneration of work by strengthening their social economy in every possible way and by steadfast increases in their rates of payment per working-day. The working-day system cannot be abolished. It can only wither away, provided there is a thoroughly developed and productive economy in the collective farm. It must be noted in this connection that the process of withering away of the working-day system occur and will keep on taking place, not by the weakening of this system, but instead by its strengthening in every possible way.

Firm introduction of monetary remuneration of work will contribute toward further socialization of labor in collective farming, because it will gradually lead to identifying the collective farmers' form of remuneration with the remuneration of workers and employees in the state-owned sector of national economy.

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A. Kakimzhanov:

To the Collective and State Farms of Kazakhstan - Rotate Your Crops Correctly

The theses of comrade N. S. Khrushchev's report to the 1st Congress of the Soviet Union's Communist Party, and ne decisions of the December 1958 plenum of the CPSU's entral Committee, emphasize that the main line of deelopment of farming in the forthcoming period remains n the development in every possible way of the production f grain which is the basis of the entire farm production. ncreased harvest yields are the principal source of growth f grain production.

The Seven-Year Plan stipulates further increase in grain roduction in the Kazakh Soviet Socialist Republic. It is ecessary in view of this to activate numerous possibilities hich exist for increasing of the harvest yields. The existng possibilities have not so far been fully used in this reublic. The yield of grain harvests in a number of econmies remains low. The principal cause for this is in the sregard for agrotechnical requirements, and especially the absence of adequate crop-rotation.

An additional 22 million hectares of fertile virgin and nused land have been brought into farming in recent years. grotechnical measures as a whole must assure not only e preservation of fertility of the soil, but also contribute ward its increase. Both science and practice have proved at in the areas with insufficient moisture adequate croptation on pure fallows must be established in order to tain consistently high harvests. In this case the pure llows are the principal means for accumulation of moisre and nutritive substances in the soil, as well as for the ruggle against weeds.

Experiences in collective and state-owned farms in azakhstan show that the sowing of grain on pure and ell-cultivated fallows yields higher and more consistent rvests regardless of weather conditions. According to ta gathered throughout a number of years in the northern eas of Kazakhstan, the average harvest yields in the onomies without fallow fields are about one-half lower an the wheat harvests in the economies which apply croptation and have the fallows to the amount of about 20% their land. Scientific observations in the Kokchetavskaia ovince show that pure fallows with surface cultivation cumulate moisture to the extent which suffices for obning even in the drought years the yields varying from to 15 centners per hectare, and in the years with normal ount of moisture yields from 18 to 25 centners per hece.

In spite of this, the majority of collective and statened farms in this republic still fail to make adequate e of crop-rotation on pure fallows in order to obtain proved harvest yields of grain cultures. The organizan of land exploitation is improving only slowly in a numr of Kazakhstan's state-owned farms in which is centrated the bulk of the newly acquired land. The perntage of pure fallows in the over-all surface of arable land in this republic is not increasing, and in 1957-1958 it did not exceed from 4% to 5%.

Year after year the collective and state-owned farms fail to fulfill their tasks in respect to the ploughing of fallows. The collective farms' 1957 plan for increasing the surface of fallow land under culture was completed by only 67%, and the state-owned farms' plan by only 60%. Furthermore the care-taking of fallows is unsatisfactory in a great many economies. Large amounts of newly acquired fallow surfaces remain uncultivated and are becoming weed-nurseries.

In the years in which the virgin and unused land was being conquered, the percentage of pure fallows in the over-all amount of arable land could remain relatively low because grain cultures could be sown for four consecutive years on the virgin and unused land. Now, however, after having had the virgin and unused land under cultivation for four years, they must also be included into the crop-rotation of the fallows.

Transition to scientific crop-rotation with the percentage of fallows ranging from 15% to 20% of arable land might, of course, create a certain degree of decrease in the over-all surface under grain cultures. This, however, must not be feared. In the first place, this decrease will be amply compensated for by the increase in harvest yields. Secondly, the surface of land under grain crops can be preserved intact or even increased in a number of areas by acquiring additional virgin and unused land. The amount of land which can be so acquired in the nearest future in just two regions of Kazakhstan, the Akmolinskaia and the Pavlodarskaia, is five million hectares.

It must be noted that so far no adequate estimates have been made as to the amount of virgin and unused land which may be fit for including into the economy. This inadequacy must be removed. Careful surveys of possibilities existing in the collective and state-owned farms in Kazakhstan, and especially in its north-eastern and western regions, will help in discovering hundreds of thousands, or even millions of hectares of land which can be made arable.

The material and technological capacities of collective and state-owned farms in this republic are adequate for continuing the conquest of virgin and unused land, and for development of the acreage under cultivation, through improved utilization of available tractors and other farm machines.

It is indispensable to keep on introducing with persistence and consistently adequate crop-rotation on pure fallows into the economies in the zone of drought. The inclusion of this problem into the Seven-Year Plan will help toward successful completion of the tasks set in respect to the increase in the harvest yields, and therefore the increase in the production of grain.

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L. Sineva:

Concerning the Cost Estimate of Collective Farm Building

The Soviet nation is entering the period of extensive building of communism. The main objectives in the oncoming period will be the creation of the material and technological basis for communism, further strengthening of the fatherland's economic and defensive power, and along with it a more complete satisfaction of the Soviet people's growing material and spiritual needs. The fulfillment of the goals set in the Seven-Year Plan will represent an important milestone in the building of communism. In the field of agriculture, this plan stipulates further development of all branches of farming. This development will supply the continuously growing demand in the nation for food and the agricultural raw materials. The decisive role in the achievement of these objectives belongs to collective farms which furnish the main part of commodities supplied by agriculture. They supply 70% of the state's grain purchases, and two-thirds of the meat and milk purchases.

The condition of paramount importance for the fulfillment of the planned objectives is a further strengthening and thorough development of the material basis for the collective farm production. In 1959-1965 over one million tractors will be produced for the requirements of farming, along with 400,000 grain combines and a large volume of other farm machines and tools. It is expected that by the end of the Seven-Year Plan the electrification of all collective farms in the country will be generally completed. Electric power consumption in agriculture will have increased by four times then, the amount of chemical fertilizers delivered to agriculture will be tripled, and the reclamation works increased. The construction of buildings in collective farms will assume along with this an ever increasing importance. According to preliminary estimates as pointed out in comrade N. S. Khrushchev's theses in his report, the volume of construction of farm-buildings in collective farms, as well as homes and cultural buildings and the cost of village development, will amount to 250 billion rubles in the period from 1959 to 1965.

Collective farms have completed a large volume of construction in recent years thanks to implementation of the party's and government's decisions concerning the development of farming. In the period from 1955 to 1957 alone, stables with a combined capacity of 48 million head of cattle were built at the cost of 31 billion rubles. Garages, warehouses, buildings for storage of farm produce, etc., were also built. The scope of construction in collective farms in recent years can be seen by the following data from the Bezhetsky district in the Kalinin province:

	1953	1954	1955	1956	1957	Total
Buildings for livestock (capacity in head of cattle)	7,003	4,139	4,225	5,916	8,415	29,698
Grain and potato storage (capacity in tons)	1,250	2,610	900	2,081	4,161	11,002
Grain driers	13	26	2	2	2	45
Garages (capacity in motor vehicles)	---	---	39	35	39	113
Gasoline storages	---	---	---	1	2	3
Smith shops	no data	no data	no data	1	2	3

In this district, in addition to these buildings, many silos tiled cellars etc. were also built. Over one-half of the long-term credits granted between 1953 and 1957 by the Sovkhozbank to the collective farms was invested in the construction of buildings for live-stock, the silos and the electric power stations.

The enormous growth in the construction of buildings on collective farms planned for the current seven-year period, and the firm establishment of the self-financing system in collective farming, urgently demand solutions for the problem of estimating the value of completed buildings. Costs of completed buildings are estimated by primitive methods in a number of districts. The evaluation of these costs is made in a great many collective farms on the basis of estimates of their expenditures in material and manpower; hence the great diversity in the evaluation of analogous buildings in different collective farms, and the difference in prices on collective farms and the state-owned enterprises. So, for example, in the Bezhetsky district the construction works organized on individual collective farms employ 40 hired construction brigades (with 2 to 4 men each) as against 28 brigades made up of collective farmers. The amount of the payment made to the hired manpower diverges a great deal from the level of estimated expenditures for analogous construction work These brigades are paid by the collective farms for the construction of standard cow-sheds for 100 head of cattle two and a half times more than the estimated cost of the sheds. On the other hand, the remuneration of the collective farm building brigades differs considerably from that which is paid to the hired brigades. Construction costs vary a great deal by virtue of these differences, and are frequently higher than necessary for social expenditures. It also must be noted that the capital property in collective farms with buildings included, has not been re-evaluated for a long time. Present amortization rates for capital property are consequently most questionable.

The farm produce prices compensate, of course, the required social expenditures made for agricultural production, and this compensation includes the cost of depreciation of capital property. The method of charging the collective farm's expenditures incurred by excessive construction in a given year against the cost of production in subsequent years is utterly unjustifiable. This, however, will be unavoidable as long as the construction costs in collective farms are calculated at the rates of actual costs of building incurred by the collective farms. If the collective farm's construction costs for a cow-shed are one and a half times higher than the socially justified expenditure, the evaluation of the cow-shed according to the actual cost of its construction will lead to unwarrantedly high amortization rates which, in turn, will be reflected in the production costs of such products as milk, meat and others. The normal costs-relationship in the collective farm will be thereby upset. On the other hand, if the production costs in the collective farm are reduced to a level lower than the socially justified expenditure, then the difference will be credited to the accumulation funds of the collective farm. Development of these accumulations will permit intensification of the process of reproduction of capital property and the collective farm will thereby acquire additional resources for technological development.

The material basis of collective farms is at present diversified and developed. The farms must keep on restoring and developing this basis. This process is connected closely with adequate evaluation of capital property in collective farms. For this reason, the re-evaluation of the collective farms' capital property is needed urgently, as well as the earliest possible passage of regulations for a method of comparative cost-estimate of completed construction. In our view, the most expedient and economically justified method is the valuation of buildings according to the estimated costs for their construction. This method would, in the first place, permit establishing a single comparative schedule of valuation of both the state's and the collective sector's buildings; and secondly, would be conducive to a firmer establishment of self-financing within each economy. The method of evaluation of buildings by the estimated costs presupposes taking into account the actual construction costs and comparing them with the estimated costs, as well as analyzing the results obtained by this comparison. The method of evaluating the buildings by the estimated construction costs would stimulate collective farms to reduce their actual expenditures for buildings and to seek the most economical forms of organization of construction works. These forms would include mainly the formation of inter-collective farm construction organizations. At the same time, this method would permit greater precision in the surveys of the growth of the collective farms' capital funds, as it would include data concerning the value of labor and materials invested in construction.

V. Dyachenko:

A Substantial Work on the Theory and Practice of Soviet Finance

Zverev, A. G., Voprosy natsionalnogo dohoda i finansov SSSR (Problems of national revenue and finances of the USSR), Gosfinizdat: 1958, 243 pp.

The State Finances Publishing House has published a most comprehensive book throwing light on pressing theoretical and practical problems in Soviet finances. The main purpose of the book reviewed here is to describe the role of finances in the process of formation and distribution of national revenue. As the author remarks, the finances in socialism "Penetrate all pores of socialist production and produce an active influence upon it" (p. 18). This alone predetermines the importance of the role played by the finances in all areas and processes of socialist economy, and especially in the formation and movement of national revenue. In this connection the book examines also the system of Soviet credit and of price forming in the USSR.

The opening chapter in this volume deals with the way in which national income is formed, and with the factors of its growth (increased labor productivity, economies in material expenditures and the growth of the labor force employed in material production). The reader will find here a great many interesting considerations concerning improvements in the wage system, the intensification of the stimulative nature of bonuses, the need for changing the existing conditions for formation of enterprise funds, the methods of accounting for various factors concerning the growth in labor productivity in determining average wages and the relationship between the movement of wages and growth of labor productivity, the differentiation of forms in organization of cost accounting in various branches of economy, etc.

The second chapter deals with the characteristics of the distribution of national income in the USSR, and with the role of finances in this process. The three chapters which follow concern the state budget, bank credits and prices as instruments for distribution of national revenue. In the sixth chapter, which is the last, problems relative to the mobilization of unused or not fully used factors of production and the connected tasks of the finances are discussed. It is impossible to touch on all subjects which are examined in this book in a brief review, and we are limiting ourselves to surveying but a few of them.

The role played by the Soviet finances is presented by A. G. Zverev in the light of its close connection with the process of distribution and redistribution of national income in the USSR, and as fundamentally different from the capitalist type of relationship in distribution. Redistribution is presented by the author as an important element in the distribution of national income.

Attention of Soviet economists has been attracted for a long time by the question of the content of redistribution under socialism, and has created many serious differences of opinion. Opinion was expressed that redistribution comes into play only if there is a transfer of resources from one owner to another. This kind of restricted interpretation only adds to the difficulty in understanding the complex system of relationships in redistribution within the state economy. This question is approached more broadly by A. G. Zverev. He writes that redistribution includes not only the income o the state which had been created by mobilization of resourc of enterprises in the cooperative and collective farming sectors, and the resources stemming from general population, but also by the revenues flowing from all so-called seconda incomes of persons not employed in material production. I our view, however, this does not seem to exhaust the question of the content of redistributive processes. Secondary incomes, such as income from pensions, scholarships, interests and prizes acquired on government bonds, etc., are not received only by persons who are outside of material production. At the same time the relations between the state enterprises and organizations on one hand, and betwee them and the state funds on the other, are in no way limited to only the primary distribution. Practical experience atte that in this case too, the methods of secondary distribution are widely applied (the redistribution of a portion of the so-called individual operational funds and of a portion of profit between enterprises and economic organizations belonging the same economic council, the ministry or department; the allocation of a portion of profit to the state budget and repr senting the primary form of distribution of the surplus pro ucts; etc.). This kind of redistribution is, of course, limite as a rule to the boundaries of economic circulation in the field of material production. Nevertheless, this circumstan does not furnish the ground for reducing the process of distribution of incomes and accumulations within the national economy to exclusively primary relations in distribution of national income. The organization of enterprises along the principle of cost accounting requires a differentiated approach to questions concerning the nature of relations in distribution within the state sector of the economy and to th division between the primary and secondary (subsequent) distribution of incomes and accumulations.

Distribution and redistribution of national income are carried out through the financial system, the mechanics of planned prices, and the payment for services furnished to the population. The importance of the financial system in this process springs from the organic connection between the finances and the entire national economy in socialism. Soviet finances are a part of the system's economic foundation and represent "An economic barometer of enormous sensitivity. Eventual disparities in the national economic plan and disruptions of relations in economy can be disclosed without delay by the financial system" (p. 83).

Being indissolubly tied to the processes of material production, Soviet finances express in monetary terms the existing relations in the socialist society's production, and contribute toward its further development. At the same tim the function of finances in distribution is limited objectivel exactly by this dependence which they have on material production. There can be no objective grounds for deficit in th socialist conditions of production, because only a budget balanced without deficit can correspond to requirements of the law of a planned and proportional economic developmen Absence of deficit is not achieved by itself, but by adequate planning in economy and finances. "In order to supply the socialist state's demand for necessary means, the economi planning and financial agencies carry out great and many-sided activity whose aim is to indicate the availability of u used or not fully used factors in the national economy, and to provide for their timely and complete mobilization and

tilization in satisfying pressing needs; this is in the inter-
sts of planned development of the socialist society" (p. 85).
t is revealed in this book that the increase in the revenue
nd decrease in expenditures achieved only by corrections
nd precise information supplied to the USSR's Ministry of
inance (not counting the lower echelons of the financial sys-
em) have reached in recent years the combined sum of 200
illion rubles per annum.

A great deal of attention is paid in this book to the analysis
f the role played by the finances in national economic plan-
ing. Among the most important objectives of planning is
hat of securing the necessary proportions in the develop-
nent of different branches of national economy. Distribu-
ion of national income in its monetary form as well as in
ind must be in a fixed relationship. Preservation of this
elationship requires a consistent activity of government
gencies which search for additional material resources, a
oordinated policy in respect to finances, wages and
rices, and strict observance of discipline in the state's
lanning of finances.

The principle of democratic centralism inherent in the
oviet system is consequentially applied in the organiza-
ion of finances in the socialist state. This principle stipu-
ates a thorough development of creative initiative in enter-
rises and economic organizations in relation to the mobil-
zation of resources which exist in the economy, as well as
relation to economical use of the state's means. The
ransition to the system of management of enterprises and
onstruction works by the councils of people's economy
rganized by administrative districts, "Removes the con-
radiction existing between the territorial community of
nterprises on one hand, and their departmental isolation;
liquidates the administrative supervisory barriers, and
rings the party and economic leadership into an immediate
elationship with enterprises and construction projects"
. 10).

Indissolubly connected with the reorganization of manage-
ent in industry and construction is the development of the
deral republics' autonomy in respect to economic and
ltural development, and expansion of their budgetary
ghts. The part of the union republics' budget in the USSR's
ate budget has increased from 31.2% in 1956 to 50.9% in
958. These budgets at the present cover 67.9% of the
verall budgetary expenditures for the financing of national
conomy, and 60% of the combined budgetary expenditures
r culture and social welfare. The combined volume of
e union republics' state budgets has increased in the last
ree years for 2.26 times, while their expenditures in the
nancing of national economy have increased 2.35 times.
result of this there has been a sharp change in the struc-
re of the republics' budgets. If the predominant appro-
riations in them at an earlier time were those for social
d cultural endeavors, today, along with the increases in
ese expenditures, a total of 55% of their budgetary ap-
opriations are directed toward the financing of national
onomy. Important changes have been made in the system
state planning and financing of the union republics' econ-
nies, and wide possibilities have been thereby opened for
higher degree of operational solving of problems arising
the fields of economic and cultural development, and
eater local initiative in discovering and rational utiliza-
n of those internal resources which are available in each
public. All this increases responsibility of the republics
d of the local agencies for the development of national
onomy. It imposes upon these organizations an obligation
seek solutions for each problem in such manner as to
ke into the account the overall national interests; to
netrate more deeply into the activities of enterprises and economic organizations; to give a fuller consideration to the requirements of different branches of economy and districts; to examine realistically the possibilities for supplying the existing demand; and to strive for a more economical utilization of resources in economic organizations and of the budget means.

At the time when the volume of appropriations for separate budgetary expenditures of Union republics is established, the specific nature of economic and cultural development in each republic must be taken into account. At the same time, however, unity of an overall financial policy must be preserved in respect to the mobilization of resources, the satisfaction of the needs of national economy and of the population in each Union republic. Utilization of material and financial resources for purposes or in proportions other than established in the national economic plan must not be permitted. The indispensable condition of a genuinely national economic planning is the centralized order in distribution and utilization of national revenue aiming at successfully solving the nationwide tasks. Interests of national economy demand unconditional observance of the principle of centralized planning in distribution of national revenue on the nationwide scale, of centralized finances, and of a single wages and prices policy. All this is thoroughly explained in this book and supported by proper arguments.

The central place in the book under review is assigned to the questions relative to the USSR's state budget. "Concentration of the main part of monetary accumulations of the economy and of other financial resources in the budget permits proper direction of these means on the basis of needs of socialist and communist construction. At the same time this concentration prevents the chances of dispersing the means in the direction of secondary requirements or measures which are not of an urgent nature" (p. 129).

As a result of the reduction of the state's retail and wholesale prices in recent years, of an increase of permissible monetary accumulations remaining at the disposal of enterprises, a reduction of taxes and other forms of payments by the population, the importance of the role played by the state budget in national economy was somewhat reduced. The USSR's industrial output increased 2.27 times in 1957, as compared with 1950. National income was doubled, but the volume of the state budget increased only 1.5 times. The state budget's participation in the financing of national economy has somewhat decreased in recent years (from 69% in 1956, to 62.3% according to the 1958 plan). Nevertheless, at the present still about two-thirds of the means furnished for economic development comes from the USSR budget. Furthermore, and as is rightly emphasized by A. G. Zverev, the leading role of the budget in financial planning "Is determined not so much by the actual percentage of national revenue included in the budget, as by the influence which the government produces through the budget on planning and on improved utilization of material and financial means of the economy as a whole" (p. 106).

The budget is the main tool of interbranch and territorial distribution, ensuring the direction of production factors into branches and economic regions, the development of which is of decisive importance for the upsurge of the national economy as a whole. Through interbranch and territorial appropriations and through a variety of controls, it produces an enormous influence even upon the utilization of those resources which remain at the disposal of enterprises and organizations. The part of the budget as the leading element in the system of financial planning is great. This book describes comprehensively also the significance of the budget in the improvement of material and cultural welfare of the masses.

Describing the role of the budget in the system of financing and crediting in a socialist state as a whole, the author notes that over 40% of the State Bank's credit funds originate from budgetary sources. As these funds are accumulated in the bank, the process of distribution of national revenue is not yet completed. Extending credits from the fund of budgetary origin to enterprises and economic organizations, the bank completes the process of distribution which has begun in the state budget.

The author describes thoroughly the content and role of two forms of financial accumulations stemming from socialist enterprises; the so-called turnover tax, and the tax on profits. This is of great importance for adequate understanding of the system of finances and prices as the instrument for distribution of national income.

The division of the revenue into the profit and turnover taxes is necessitated by differences in the level of rentability, the objective of securing an even flow of revenue to the state, and by the tasks relative to economical management and the system of cost accounting. A. G. Zverev gives a detailed explanation of how the existing system of prices creates an uneven level of profits in different branches of the economy. As a rule, the means of production are bought at prices established according to actual production costs (with an additional minimum percentage allocated for rentability), and therefore these prices do not express the real cost of the goods in question. The receipts from sales of means of production do not amount to the whole net income created here, but include only part of it. On the other hand the prices for consumer goods are generally fixed so as to correspond approximately to their full value, while the means of production required for the manufacture of these goods can be acquired at reduced prices. Therefore the receipts from sales of consumer goods include in full not only the profits stemming from their manufacture, but also a portion of the profit created in branches of heavy industry, transportation, etc. If monetary accumulations were to remain in full at the disposal of those branches of economy through whose prices these profits have been realized, then light industry would find itself in an advantageous position as compared to that of heavy industry. While surplus resources would be created in light industry, heavy industry would remain unable to assure the completion of its plans of capital investment and development of new technology.

In actuality, the turnover tax paid by socialist enterprises represents that portion of their monetary accumulations which is transferred through fixed fiscal charges directly to the centralized system of the state. The amount of this tax is determined exclusively by the volume of sales. The remaining monetary accumulations form the enterprise's net earnings and serve as a basic indicator of the growth of labor productivity and reduction of the cost of production, because the volume of the enterprise's net earnings depends largely on the qualitative indices of operations of enterprises and economic organizations. In consequence of this division of the enterprise's monetary accumulations into two parts, the index of rentability is represented not in the relationship between the cost of production and the sum of receipts from sales, but through the relationship between the production costs and that portion of overall monetary accumulations which is left over after the payment of the turnover tax and which represents the actual profits of the enterprise. This division of monetary accumulations and the transfer of a part of accumulations to the budget through fixed fiscal charges, help to accelerate the circulation of material means and thereby, of course, contribute also to the growth in both volume and rate of growth of expanded reproduction. This system also leads to the strengthening of cost accounting, the increase of the personnel's interest in reducing costs of production and circulation, and assure a regular and even influx of budgetary revenue.

Examining the two forms of fiscal charges on socialist enterprises and organizations, A. G. Zverev shows that the names of "turnover tax" and "profits" do not express their actual content. Their source is one and the same; it is the ne earnings (the surplus product) created in socialist economy Even in the period of transition from capitalism to socialism, the state's fiscal charges made on the state-owned enterprises and organizations (the author examines the business tax and excises) began to express to an ever incre ing degree the actual net revenue of socialist economy. As their nature as taxes withered away, only their fiscal form was preserved. It is not the turnover tax which determines the level of prices, but the prices determine the amount of the turnover tax charged. The single nature of both the tur over and the profits taxes is attested by the fact that even after the price-levels have been fixed, the ratio of these tw forms of accumulation can change in various directions.

Having explained the nature of the two forms of fiscal charges of socialist enterprises (the turnover tax, and the on profits), A. G. Zverev goes on to explain the necessity for withholding a portion of profits in state enterprises for the national budget. This is necessary for two fundamental reasons: first, because of differences between profits and expenditures in different branches of production; and, second, because of the tasks concerning the strengthening of cost accounting and financial control. Interesting data in this respect are presented in this book. Monetary accumul tions (profits and amortization) in light industry exceed ne 3.4 times the planned expenditures for development of production (capital investment, growth of operational funds an capital repairs charged against amortization). The level o planned expenditures is exceeded by monetary accumulatio for nearly three times in food industry and for nearly one and a half times in the machine-building industry. On the other hand, planned expenditures exceed the accumulations for 1.5 to 1.6 times in nonferrous metallurgy, and the pape lumber and fishing branches of industry. This ratio is fro 1.9 to 2 times in metallurgy and the oil and gas branches o industry, and 2.9 times in the building materials industry. The coal mining industry is in deficit as far as the plan is concerned, and consequently the system of finances must cover not only all of its expenditures for development of production, but also a portion of its expenditures for produ tion itself, including the cost of production. By the means withholding a portion of profits in other branches of econo there is achieved the necessary equilibrium between that portion of monetary accumulations which is left at the disposal of the enterprise, and the requirements for planned expenditures. Along with this, the system of two budgetary charges (the turnover tax and the withholdings from profits assures a twofold financial control. Controlled are the rhythm of the enterprise's fulfillment of production plans and planned earnings (via the turnover tax), and the produc costs and objectives relative to profits (via withholdings from profits).

The author points out that in the planning of profits the specific nature of each branch of economy should be taken into account, as well as their actual requirements for resources for development of production. A differentiated approach is required toward the question of evaluating the rentability of various branches of economy. Some kind of uniform and fixed rate of the portion of profits remaining at the enterprise's disposal within the system of self-financing can be justified only in relation to the profits in excess of the planned amounts. If this method were applie

the planned profits as well, then it would create many un-
esirable effects. It would lead to unplanned utilization of
rge sums of money from the profits for endeavors without
rimary importance, and thereby to the dispersion of signifi-
ant funds toward secondary requirements; it would slow
own the technological progress and growth of production in
nterprises with a relatively low rentability; it would dis-
ort proportional distribution of national revenue as it is
stablished by the current and prospective plans; it would
low down the turnover of resources in economy; and it
ould create difficulties in the financing of heavy industry
hich has certain branches in which capital investments
xceed the profits for several times. "Experience shows that
e level of rentability cannot be the same in various
anches of industry insofar as their respective expenditures
r developed reproduction differ; there are also fundamen-
l variations in the costs of analogous production in differ-
nt enterprises; etc." (p. 196).

At present the planned rentability ratio is from 3% to 5%
the average production cost in a given branch. This level
rentability is insufficient in certain branches of industry
it cannot cover expenditures which must be paid from the
rnings, and thereby difficulties are created in liquidating
sses within the branch. It is necessary to introduce a
fferentiated increase of the level of average branch profit-
bility, and leave at the enterprises' disposal a greater
rtion of earnings obtained within and over the planned
nounts; this is necessary in order to increase the workers'
llectives' interest in fulfilling and overfulfilling the objec-
ves set by the plan.

The book reviewed here examines three possible ways of
lving the above problems. This can be done by raising
olesale prices, by lowering the turnover tax rates, and
lowering the costs of production. Noting the existing
adequacies in the current system of prices for the means
production (in particular, the lack of accounting for past
d present labor), A. G. Zverev is critical of proposals
ich have been published and which suggest an overall
ice increase. This unfounded increase of prices "Would
contradictory to the party's and government policy aim-
at further decreases in the costs of production and in
prices for means of production and for consumer goods" (p. 206). To the contrary, it is necessary to strive toward securing a yet greater decrease in prices for the means of production by increasing labor productivity and decreasing the costs of production. It is the decrease in the production costs, achieved through technological progress, improved organization and placement of better geographic distribution of production, more effective utilization of capital funds, etc., which must be the principal means for liquidating the losses within the branches and for raising the level of profitability. This, of course, does not exclude the possibility and necessity of raising the existing level of prices for some commodities.

The inter-branch redistribution of national income is materialized through the system of prices and differentiated withdrawal into the budget of portions of monetary accumulations in enterprises and economic organizations. At the same time, of no less importance is the system of territorial distribution of means among economic regions and republics, because capital investments in some of them exceed the volume of monetary accumulations, and therefore are financed to a considerable degree from the national resources. The author describes the role of the budgetary system in territorial redistribution of national revenue. A portion of the revenue of economically developed republics and districts is channelled through the budgets of republics and the USSR budget to capital investment and other objectives in those republics and districts which lack sufficient resources for these investments.

An important part of the book is given to questions concerning capital investments and the utilization of basic funds and their re-evaluation which is due in early 1960; as well as to the development of new forms of amortization; the role played by the budget and the system of price formation in the constant rise in the Soviet people's material and cultural level; and to a great many other vitally important problems of great theoretical and practical significance.

A. G. Zverev's work is of considerable interest not only for those employed in the finances, but also for all who are studying the Marxist-Leninist theory and the practice of communist construction.

O. K.

A New Form of Scientific Research in Advanced Schools of Economics

The reorganization of management in industry and construction required intensified economic work in enterprises and changes in the organizational forms of control over the development of production. Work in new conditions demands continuous improvement in organization of production and in perfecting the planning. In order to render a realistic assistance in this respect to the enterprises in the capital, the State Economic Council of the City of Moscow has created a workshop in economics and organization of production at the Moscow Institute of Economic Engineering (the MIEI). Analogous workshops have been set up in Leningrad and in a number of economic centers, in the schools of advanced economics.

Among the main areas of scientific work in the MIEI workshop are the following: the working out of bases for rational relations in production and cooperation among enterprises in Moscow; perfecting industrial organization in the economic and administrative district of Moscow; study of the level of mechanization and automation in enterprises, and technological and economic foundations in them for further development; improvement in the system of operational planning of production, calculation and controls, based on wide utilization of modern techniques for computation; working out of methods for determining the operational level of enterprises, and the analysis of their productive and economic activity; improvement in the structure of enterprises under the State Economic Council, and working out proposals for rational consolidation of separate enterprises; improvement in the organization of wage-calculations and methods for fixing production norms; participation in working out of economic effectiveness of introduction of new technology and the utilization of capital investments; participation in working out the balance of fuel and power supply of Moscow, and of proposals for further development of utilization of the existing electric power stations in the Mosenergo network; general synthesis of advanced experiences in the field of economics and of organization of production for the purpose of broad dissemination of this experience; and a number of others.

The MIEI workshop in economics and organization of production has been in operation for less than a year. Nevertheless, it is already clear that the decision to set up this kind of organization for applied scientific research was justified. It permitted operational utilization of the collectives of institutes of advanced study which, in the majority of cases, are closely linked to industry and have already been cooperating with enterprises toward improvement in the organization of production and planning.

One of the advantages of this workshop that has been created in our university is also in that it can bring in a large number of students for massive surveys of various plants. While on the one hand this permits acquiring quickly a vast body of materials from which conclusions can be drawn, it also enables the students to familiarize themselves with production and its economic specificity. In this set-up the learned councils and academic chairs have the opportunity to discuss on the basis of this workshop the general questions of methodology in organization of scientific work having significance for all branches of industry, as well as to draw to this kind of reasoning both a broader strata of scientists, and the workers in industry. In this way the evaluation of scientific work becomes more adequate.

In view of these advantages a large collective could be attracted in very short time to collaborate in this work. There are twelve doctors of sciences and professors, and thirty doctoral candidates and assistant professors. In addition to faculty members, the workshop also attracted a number of highly qualified economists, economic engineers and engineers who possess vast practical experience in economics and in the organization of production in plant as well as in scientific research. Young scientists who hav graduated successfully from advanced schools of economic engineering are also participating in this workshop.

It is still too early to evaluate as a whole the scientific research which is going on in the workshop created at the MIEI. However, a number of projects which have been completed and which have great importance for a number of categories of enterprises, attest convincingly to the effectiveness of the scientific effort made in this institutio of advanced studies. Thus, for example, a group of scientifi workers from this workshop has made proposals to the plant "Caliber" concerning the calendar planning with the help of organizational techniques and analytical computers. This proposal is already being implemented. This scientific work will allow a significant increase in the level of scientific enterprise management and will contribute toward rhythmical operations of enterprises.

This workshop is developing the methodology for in-plan planning with the use of electronic machines, and for this purpose the workshop is using the Plant for Analytic Computers for its base of operations. The group of scientists in this workshop is completing the work on the technologic and economic bases providing elements for rational specialization and cooperation in the production of calibrated steel for the requirements of Moscow's industry. Surveys of these requirements are already completed and include data on the need for steel classified by grades and sizes, as well as data on the volume of irrational countertransportation in Moscow's industry.

This workshop, with the assistance of the Moscow Instit of Forest Technology, is now completing a work on technological and economic bases providing elements for rational specialization and cooperation among the furniture enterprises under the State Economic Council of the City of Moscow.

The workshop is studying and analyzing the economically most effective relations in production among the cotton industry's finishing and weaving mills in the area of the State Economic Council of the City of Moscow, and enterprises in other areas. Also surveyed are the technological and economic bases for rational specialization and cooperation among the forge-shops of the State Economic Council of the City of Moscow.

This workshop is making serious studies of such subjects s the technological and economic foundations for the ob-ectives set by the plan for the reconstruction of Moscow's etallurgy plant "Hammer and Sickle." The difficulty here s in that this plant is within the city limits, and its recon-truction must be achieved without changing the area of the ite of the plant.

In the field of power supply studies are made of the tructure of Moscow's fuel supply and the technological nd economic bases for the use of gas in thermal electric ower stations. Materials have already been completed s to what concerns the capital's fuel and power balance nd concerning prospective development of this balance, ith the balance of gas supply included.

This workshop's collective is paying a great deal of tention to the development of methodology for deter-ining indices of labor productivity and the volume of roduction in various branches of industry.

Important work is carried on in this workshop on the eme of the "Analysis of Basic Branches of Industry in oscow and Development of Measures for the Improvement Its Planning." In this framework a detailed study has been made of the existing system of planning in the basic branches of industry and in the State Economic Council.

The workshop is working on the problem of rational organization of management in industrial enterprises and is studying the existing organizational structure in such varied branches of industry as the automobile, machine construction, electrotechnical and textile plants. The experience in the plant organization without individual shops is studied and recommendations are worked out for the improvement of organization in other enterprises.

Preparing itself to meet the CPSU's 21st extraordinary congress in a befitting manner, the collective of this workshop has pledged itself to complete a number of important scientific projects before their scheduled term. Fulfilling this pledge, the workshop for economics and organization of production at the MIEI has made a study of requests by the State Economic Council and of a number of enterprises, relative to subjects to be placed under scientific study in 1959, so that the workshop may draw the necessary practical conclusions on how to solve the tasks which are set before it.

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